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The Life-Saving Exhibition in Brussels.

THE Brussels Exhibition, of which we gave an anticipatory notice a few weeks ago, has more than answered its promise. The general scope of the project was to set forth, as in a bird's-eye view, the actual state of opinion and invention, with reference to prevention of accidents and cure of diseases, including the risks of war. Upon a majority of the details, however, it might be superfluous in these columns to enter. But a vast proportion of them refer to the positive house accommodation, comfort, and security of people, whether inhabiting a city or a village. Several courts are filled with contrivances of escape from burning houses, and not a few are rich in suggestions of humanity in many a kindred form. It is the house which is the practical point to arrive at, notwithstanding all the luxurious ideas of M. Viollet-le-Duc, who writes only for the rich, and whose château is not complete without a vinery and a peach-orchard. The exhibitors at Brussels are less ambitious. They are pragmatical in a certain sense, no doubt, in so far as they construct theoretical "cities" for "working-men" in which no working man would consent to live, as though he were a *cagôt* or a leper; they aim at doing too much,—the Germans and the Russians especially; but, taken for all in all, they have made a display to which the epithet "noble" may, without the slightest reserve on the score of hyperbole, be applied. But, since Mr. Kay, the travelling commissioner for the University of Cambridge, wrote his admirable volumes, the question of the workman's or labourer's house has taken a front rank in all sanitary discussions. We find it here, at Brussels, most elaborately and variously illustrated. There are plans for the drying of foundations, the weather-proofing of roofs, the decent separation of the sexes, in even the poorest cottage, the cheapening of fires for winter, the full and free ventilation in the summer-months, the storage of food, economy in furniture, and the healthy arrangement of clothing — a point upon which, it may be remarked, the Germans and the Russians, the Swedes and the Danes, are peculiarly careful. No fewer than 240 examples occur of this character in the Exhibition at Brussels, concerning which itself a word may be said. It is not contained in a single structure, but grouped, without detriment to a single tree, in Maria Theresa's Park, — a cluster of pavilions, kiosks, galleried edifices, and so forth; but all arranged in harmony with the original design, each part being happily accessible from every other. "Sweet home," it may be said, is the burden of the entire scheme. The Belgians, like the Dutch, it will be remembered, have a narrow area upon which to work; they have little room for orchards or gardens; they are not, habitually, tourists or travellers; hence, in some degree, their peculiar attachment to home, as demonstrated in this Exhibition. But the domestic evils in connexion with the house, which are displayed at Brussels, are, if slightly exaggerated, none the less suggestive. The comparisons drawn between the Belgian capital, Paris, and London, are by no means complimentary to ourselves, or even just; but Continental ignorance may be excused. We may admit, however, "the heavy, squat appearance of the houses in our suburban streets." Then, the promoters of the Exhibition, quoting from an English writer, say,—"Over and above the daily routine come the cataclysms; the pipes burst in frosty weather; the spring runs dry in the summer; the drains get out of order; and stinks and rats infest the house. . . . . An east wind blows all the smoke out of the fireplace, and ruins, in an hour, the wall-paper and the satin furniture; and yet houses are built too high for their breadths, which is as much a fault of the Continent,—where all is not faultless,—as of England." But the Brussels Exhibition is, only under certain aspects, subject to our review. Those aspects are:—its proposed enlargement of dwelling-space for families; its intention, as the programme states, "to bring homes more under the influence of architectural taste," and, in connexion with these and several other topics, we have a large variety of opinions. For example, it is said, and we fancy it has been said before:—"First, we have hotel life, admitting of great mobility, but made miserable by endless jostlings with complete strangers of every rank, and in every stage of hurry and bustle, by the impertinence and unconcern of the servants, due to their entire independence of you. . . . . Next come the flats, which have the merit, in common with the hotels, of rendering architecture of a noble kind possible; but this is all." The American eulogium, even at a competitive exhibition, stops here. Not, however, that, at this point the Exhibition stops. Will our readers have patience while we demonstrate the "thoroughness of a new American mansion," or hotel, for the object, as designated, is vague, with "thirty dining-rooms, thirty halls, thirty libraries, and thirty sets of books, pictures, ornaments, and articles for furnishing all these rooms, with thirty cellars, at least, to be filled with coal in cold weather, and more than thirty water-closets." Then, says the report, "We must have one dining-room, two drawing-rooms, one hall, one library, a few additional rooms; and, as sources of additional gratification," make us "one billiard-room, one theatre, or lecture-room, one smoking-room, one reading-room, and one billiard-room whereto a gentleman can retire, with hope that silence will not be an 'unattainability.'" So far, the Brussels Exhibition is an exhibition of nonsense and quackery, with a thread of commonsense and practical experience running through it. But, as a rule, exhibitions are the opportunities of empirics. We are very far from wishing to undervalue the ideas or results entertained, attempted, or demonstrated by the promoters. A future occasion may, perhaps, allow us to render justice to them. It is invariably a delicate task to state and classify the laws underlying complex relations, because it is really optional how far we are bound to carry our analysis. Just as we may describe granite as made up of quartz, felspar, and mica, we are at a loss when we think we have found an exact result.

This, however, is wandering from the principal point, which is that of the industrial home. In the Brussels Exhibition, as in that of Amsterdam, the "dwelling-house" is set down as "among the first requirements of civilised society," and from the German catalogue we extract the following:—"Class I.—Shortly termed houses, but including institutions for the use of working men; plans of dwellings for married and unmarried working men and agricultural labourers; plans of bedrooms, kitchens, and boarding-houses; washing and reading rooms, and places of amusement. It also includes (we are not responsible for the grammar of the catalogue), —"Any portions of these buildings; model dwellings; materials for construction; experiments with cheap materials; mortar, iron, and concrete; felt and other coverings for roofs; and, in short, as the projectors declare, every element or component part of domestic architecture." Of course, they are right in their assertion that the importance of decent and healthy dwellings stands foremost amongst the social necessities of the day. This is, after all, the most indispensable need of the poor. Without a house there can be no health. And tens of thousands of habitations in London and our other great cities are not houses, or homes, at all. There was a noble-minded man, who lived a few years ago, and who wrote a few words upon this subject. He said,—"We need not waste words in pointing out the essential character of this necessary of life,—a home of some sort, in which an existence not wholly unworthy shall at least be possible."

Such is the idea of the inventors, belonging to this class, at the Brussels Exhibition. They contribute, for example, new systems of gas and water supply, and so forth; and, if it be impossible to welcome all of these with cordiality, some, at any rate, may be adopted, upon trial at least. Mr. Hovell Thurlow may be depended upon, with regard to one point, and it is a point that concerns every family, — the low-class families particularly,—in the land. Dealing with the Mulhouse system of four-house blocks, persisted in at Brussels, from 1867 until now, and which we have invariably opposed, he says:—"In blocks of four contiguous houses, one morose owner, one shrew, or common scold, or one set of ill-conditioned children, from whom there is no power of escape, may make the

habitations of the other three unpleasant, and render most desirable the right of forcible eviction"; and he tells us, further, how, in a court, "a common pump has kept an attorney in good practice." Such affairs are known in England, and they are known elsewhere all Europe over. Drury-lane and Houndsditch, let it be remarked, have their parallels upon the Continent.

But, referring, once more, to the Brussels Exhibition. The Dutch Carpenters' Society have a model for a row of cottages. This represents a block of eight buildings, precisely similar to those which were exhibited at Amsterdam, eight years ago,—each with a separate entrance, opening immediately into the living-room. The models of the little buildings at Dort, however, are, perhaps, the most practical. We will allow Mr. Hovell Thurlow, if he will permit himself to be abridged, to describe them, and his description answers accurately to what we have just seen at Brussels. The cottages face east and west, and have two fronts, one family occupying the ground-floor, and another the upper story. Each enters by a porch containing an outhouse. "In the case of the first-floor family, this porch is reached by a broad, solid stair, springing from a yard about 50 yards square." From the porch—and here is a point of considerable interest in the Brussels Exhibition, as it was at the Exhibitions of Paris, Havre, Leipsic, and Amsterdam—you enter a parlour, without an approaching passage, 14 ft. or 15 ft. each way, "with two windows; a fireplace in the middle of one side,"—a rather unmanageable Dutch phrase,—having a cupboard on the one and a sleeping alcove on the other side of it, and "in the back wall" two doors, one leading to a well-lighted kitchen, with a chimney and stove, two large cupboards, two dressers, and a cellar for the storage of potatoes; the other into a sleeping-room, with two beds. The internal arrangements of the upper and lower floors are precisely identical. But the garret is wainscoted, and can be divided between two families, the upper one entering by an in-door ladder, and the ground-floor family by an out-door ladder, leading to an end gable window. The underground cellar can, likewise, be divided, and entered, as Mr. Thurlow says, by the ground-floor family, if desired, from the inside of the dwelling, and by the upper-floor family over some steps from their garden. Usually, however, the ground-floor family takes the whole cellar, and the upper family the whole garret. Social precautions are understood thus, as in a philosophical treatise which came into our hands,—"In either case, the two families need never meet, and there need be no collision, nor even communication, between them, if not desired by themselves." It is not to be wondered at that this subject should have engrossed so large a share of attention on the part of the Brussels Commissioners, and their colleagues in every quarter of Europe. No doubt they had other questions of interest to engage their minds,—the disposal of the dead; projects of cremation, mortuaries, new burial systems, and hospital architecture. There are, with reference to the last-mentioned topic, no fewer than 101 models and plans,—some of overpowering magnificence, which can never, by any possibility, be carried out; at once splendid and sad, grandiose and mournful; works of "soft-handed gentlemen," concerning the majority of whom it may be said, justly, that "there is no record of design at all." Saying this, however, we do not intend to imply that the Brussels Exhibition is a failure. It is, on the contrary, up to a particular point, a great and deserved success. There was nothing attempted which has not been carried out, and we have only, for the moment, glanced at one portion of the ground supposed to be covered, i.e., the architects' and the builders' fancies. In other respects, and in many varieties, the Exhibition is full, rich, and, so to term it, thoughtful. We have inspected many, in every country almost of Europe, but have never seen one which adhered to its purpose so faithfully. If, indeed, our notice has confined itself to an especial class, it is, at any rate, on account of no default on the part of the Exhibition, which deals with the construction of ships as well as of houses; of fire-proof buildings, and fire-escapes; and with every mechanical means of protecting human life from the consequences of human neglect or ignorance. There is hardly an invention of recent times,—whether with regard to lightning conductors, gunpowder magazines, railway appliances, the disposal of the dead, or the safe employment of workmen on scaffolds, or in vaults, or mines, that is not, more or less, illustrated in an exemplary manner. Well, after all this effort, must it still be true (and, as a matter of fact, it is not true now), that "there is nothing which a Londoner will so strenuously condemn as his abode, and that this is but an excusable result of all the troubles and inconveniences that the house inflicts upon him. The house in question is, generally, a wooden booth, covered at the top with slates, enclosed around with a thin film of brickwork, and daubed about with plaster. It can hardly, in fact, be called a building, and, for its size, it has far less strength and stability than the furniture it holds." Says a Belgian writer, "an English abode is a deep and inexplicable mystery, tending to irritate the stomach and derange the brain." Possibly, however, we may have seen some illustrations in the Exhibition of the Brussels Park which may not merely reconcile ourselves to our own domestic architecture, but also induce us to congratulate the Belgians upon being our best imitators in Europe. Their Exhibition is one worthy of them, and of all the nations by whom their grand ideas of humanity have been approved. The Fourth Henry of France said that he wanted to see a fowl on every peasant's table; the Second Leopold of Belgium says, in effect, that he wishes to see a decent roof over every industrious man's head.

DIFFICULTIES IN THE WAY OF PROMOTING DWELLINGS FOR THE POORER CLASSES.

THE Earl of Shaftesbury brought the Whitechapel and Limehouse Improvement Scheme before the House of Lords on the 4th, and again on the 6th inst., in order to make observations on what he supposed would be the first of a long series of Bills. No one who takes a real interest in the welfare of the working classes can fail to agree with Lord Shaftesbury in regretting that no provision should be made, in Bills of this nature, for the convenient accommodation of the persons to be ejected from their dwellings. It is by no means the first time that attention has been called to the serious evils attendant on wide and sudden displacements which have already occurred in more instances than one. The example of Glasgow is one which should be remembered by our English Municipal Bodies. The municipality of that city have made extensive improvements, involving the demolition of much house property, and of the abodes of many poor persons. In no case, however, were the people compelled to remove until it was ascertained that adequate accommodation was provided for them within reasonable distances. When we remember the wide sweep that has been made in the metropolis for railway purposes, and the extent to which the house accommodation of the poor has thus been reduced, without any thought of providing an equivalent, it is obvious that any schemes directly intended to remove crowded dwellings ought to be jealously regarded, lest in fighting against one evil another be introduced. We shall be among the last persons to be rightly accused of indifference to that part of sanitary reform which demands the demolition of unhealthy and overcrowded dwelling and lodging houses. But it is not by the simple process of turning the inhabitants into the street that such a reform is to be effected. We trust that before Bills for such objects are confirmed by Parliament the president of the Local Government Board—or, failing that official, some independent member of one or other House of Parliament,—will insist on the insertion of clauses that shall prevent the injustice of the wholesale routing out of poor inhabitants without due provision for their need of shelter.

In the amended Bill some provision is included for this purpose. The new tenements are to be disposed in blocks, of five stories high. Eight hundred and eighty-eight tenements are contemplated. These are to consist of 117 tenements containing three rooms each; of 650 tenements containing two rooms; and of 121 consisting each of a single room. Thus, accommodation is provided for 3,870 persons, allowing one room for two and a half occupants. It appears, however, that the very difficulty which the new buildings are intended to obviate springs up afresh on the very face of the scheme. One considerable cause which has led to overcrowding is poverty. We do not deny that a vicious habit once formed is hard to eradicate, and that those who, in the first instance, would have shrunk from the crowded publicity of a poor lodging-house may become so accustomed to the life they were at first forced to lead that they will not be ready to take any steps to change it. That, no doubt, is often the case. The habitations of the poor in our great cities have not, until late years, been built expressly for them. They have, to a great extent been formed out of old houses, of moderate, or even of large size, situated in neighbourhoods which have gradually lost their original respectability in consequence of the ever-increasing density of the building with which they are surrounded. Such houses will, in the first instance, have lost the favour of the class of occupants for whom they were built. They will then, very likely, have remained long tenantless, and thus have fallen into that dingy and ultimately dilapidated condition which attaches so much earlier to empty than to tenanted houses. Most likely while in this state they have been sold, or have passed in some way into the hands of those who will have striven to increase the rent they returned by multiplying the number of tenants they contained. They have been let, sublet, and re-sublet. They have been divided into all sorts of inconvenient and unwholesome ways,—and crowded both as tenements and as rooms. Thus they have been often converted into sources of income as large as they could have afforded in their palmiest days. But it has been an income wrung out of the poor. Each tenant has had to pay a rent which might be all that he could afford, and which possibly might not have been too high for such house-room as ought to have been provided for him. It is by the process of crowding that the rent has been raised. We can thus trace, step by step, the mode in which these rookeries have sprung up. But we cannot see that the causes which led to their formation have been checked. On the contrary, some of these causes are in more vigorous action year by year. The old and miserable dwellings, on which no more was laid out for repairs than would keep a roof over the walls, may have attained long since their highest rack rent. But over all other portions of the area of the metropolis and other great cities and towns, the rate of rent is continually rising. The very clearing away of old houses raises the price of the surrounding land. All things that contribute to the expense of building have, as our readers well know, risen of late immensely in price. To build a house on a given spot in London, containing the same cubic quantity of space and material as the house that was built on the same spot fifty or a hundred years ago, would require a far higher expenditure at the present moment than that which was incurred in the former instance. Thus it is obvious that, to some extent, the accommodation which we are now preparing for the poor is more costly than that which we are destroying, and rightly destroying. It is more costly because we insist on more cubic space for individuals. It is more costly because it is a new building instead of an old one, and because its rent ought to be proportionably higher than the bare interest of the money, so as to provide for depreciation of property, and, at the lapse of a given time, for thorough repair or rebuilding. The old houses have long since passed this stage. Every year that they can be coaxed to stand is an almost unhoped-for addition to their life. On economical principles, then, their rent ought to be lower than that for new houses of equal accommodation ought to be,—it does not follow that it is. It may be said that the old rent is an unjust and extortionate rent; but it is possible that this might also be the case in new houses. We cannot enter into the question of the moral character of the landlords,—we can only compare legitimate causes of increase in rent. And these, other things being alike, are in favour of the old building against the new. Thirdly, the prime cost of the new building must be very considerably greater, for the same amount of the accommodation than was that of the old one. Therefore looking at the case not in a sensational, but in a practical manner, we find that the new abodes offered to the poor are in danger of becoming more costly than the old ones. They may be made to bear a higher rent than the old ones did, except in so far as that rent was improperly high—that is to say, in so far as it was raised by the greediness of the landlords above the fair ratio of remuneration properly due to the amount of capital involved in the house property. This being the case, one great evil which led to the overcrowding in the old houses, may be actually aggravated in the new. If sanitary legislation steps in, and limits the subletting process, and insists on the allotment of a given cubic space per inhabitant,—which, we all

agree, ought to be the case,—how is the economic difficulty to be met? Who is prepared with a plan that shall make both ends meet,—that shall provide the requisite accommodation, pay ground-rent, or interest on the purchase of land, house-rent, or interest on the capital sunk in building, together with provision for the replenishment of that capital within a given time, and current repairs; and that shall at the same time only impose a rent within the means of the class of tenants who are contemplated to pay? The difficulty is serious, and anything that may tend to lighten it should be received with much gratitude.

All the questions to which attention has been so properly directed by the Earl of Shaftesbury seem to us to be subordinate to this master difficulty. Indeed, they tend, to a certain degree, to aggravate its pressure. Provisions of all kinds for the decency, the comfort, and the cleanliness of the lodgers are essential. But every such provision entails cost,—that is to say, entails an advance on the minimum rent per tenement. So again, as to water supply, high service and constant service are most desirable. But the height of the blocks of buildings, and the level of the ground on which they stand, have to be taken into account. We may ourselves look forward to the time when high pressure and existent service shall be adopted throughout the metropolis. There is good reason to anticipate (although the matter is by no means certain) that a less daily demand would be made on the stores of the metropolis water companies by a constant service than by the ordinary plan of supply for a limited time, and the storing of water in cisterns. But we cannot expect that the price of supply per head will be less, at any rate, on the constant service system, than it is at present. The water companies, then, cannot be expected to supply the new buildings at less than the actual average rate of a ton of water per week per individual. We see that two and a half individuals are allowed per room. That gives two and a half tons of water per room per week. The actual price per ton, if we analyse the reports of the water companies, of the present supply, is 1·4d. That will give a water-rate of 3½d. per room per week, or 3½d. per week for a single-room tenement; 7d. per week for a double-room tenement; and 10½d. per week for a three-room tenement. But this charge, which amounts to 15s. 2d. per annum for the single room, and to 2*l.* 5s. 6d. per annum for the three-room tenement, is a very notable addition to the rents. As a check upon this estimate, it may be noted that the annual average charge per head on the inhabitants of the metropolis during the last year returned for water was 6s. 6d. This would give a rate of 16s. 3d. for the single-room tenement, and of 2*l.* 8s. 9d. for the three-room tenement. The difference of cost probably represents the water taken for public purposes. Has this matter been duly considered and wrought out in black and white by those who are projecting the new dwellings for the poor?

Again, the question of lighting has to be considered. If we regard, not the present cost of London gas, but that diminished cost at which it is proposed, in the Bill now before Parliament, that it shall ultimately be supplied, we have a price of 3s. 9d. per thousand cubic feet. The ordinary burner used by consumers produces a flame 3 in. high, giving the light of sixteen sperm candles of six to the pound, by the consumption of 5 cubic feet of gas per hour. This is the proportion arrived at for what is called sixteen-candle gas. If the gas be impoverished in quality it must be increased in quantity. Thus 6·65 cubic feet of twelve-candle gas are required to give the light of 5 cubic feet of sixteen-candle gas. If we consider light to be required for twenty-one hours per week on the average throughout the year, in each room, we have a consumption of nearly 5,500 cubic feet of gas; or, if there is no waste, of exactly 5,460 cubic feet. This alone amounts, at the price above quoted, to 1*l.* 5s. per tenement per annum. It may possibly be said that a smaller burner may be used, and that thus a less annual consumption will occur. On the other hand we have taken all the conditions most favourably to the consumer: pure gas at a minimum price, burnt for a minimum allowance of time. It must be remembered also that we have only allowed one burner per tenement. Additional gas must be consumed for passages, staircases, and the common portions of the block buildings; and these burners ought, as a rule, to burn through all the hours of darkness. Again, the question will arise as to the distribution of gas. If each tenement were supplied with its own meter, there is an addition directly made of 4s. or 6s. per annum to the charge for gas. Without separate meters there is no mode of apportioning the charge. The occupant of one tenement might require double the number of hours of light required by his neighbour. Some average must be taken in order to avoid the cost of separate meters. The average rate per head actually paid by every Londoner for gas last year was 17s. 3d. This, of course, includes public lighting of streets and courts, as well as private consumption. But it by no means excludes the consumption of an enormous quantity of oil, tallow, and other hydrocarbons. The poor, who use gas, use it far more exclusively than the rich, and thus probably consume a quantity per head not much, if anything, short of the average consumption. Much of this, however, no doubt, will be in the street shops, and not in the dwelling-rooms. The average of 17s. 3d. per head gives a charge of 2*l.* 3s. 1½d. for each room accommodating 2·5 occupants. For these reasons it is probable that the above estimate of 1*l.* 5s. per tenement per annum for lighting is not in excess.

The total cost per head of the various rates now levied in London comes to an average of 50s. per annum. This includes the foregoing items of gas and water. If we deduct the allowances already made for these supplies from the total, there still remains a charge of 1*l.* 6s. 3d. per head, or 3*l.* 5s. 7½d. per room, for Metropolitan police, Local District Boards, Board of Works, Commissioners of Sewers, and Metropolitan School Board. It is not very evident how solid and substantial houses, such as those which we contemplate must be, can be relieved, without special legislation, from a proportionate part of their rates. In case of their liability, it will be an addition to the rent, made probably in that form. Even if the occupiers were themselves rated separately, which would be a great waste of money in the matter of collection, the amount payable would not be diminished by that fact. If we conceive that by any arrangement the occupants of the new lodging-houses were only made liable to half the average rating of the metropolis, estimated per head, which would reduce the incidence of all rates, with the exception of what may be called the remunerative charges for light and water, to about a couple of shillings per head, we still have an annual sum of 3*l.* 2s. 6d. per room to be added to the rent proper, or hard upon 1s. 2½d. per week for each one-roomed tenement.

The question of rent itself remains to be considered. If we allow 500 cubic feet of space to each individual, we require 1,250 cubic feet per room. Will builders be found to execute the work required at a lower price than 10d. per cubic foot? If so, a proportionate reduction has to be made on the following calculations. For cottage dwellings, indeed, accommodation may be provided at probably the half of this price per foot. But if we regard substantial houses, five stories high, built under the conditions incumbent on the London builder, the rate will not be low. We take a maximum, because we wish the subject to be wrought out in all its bearings. The builder's price for the tenements will amount, on the above assumption, to 52*l.* 1s. 8d. per room. To this must be added a sum for land, whether purchased or paid as ground rent. It would be rash to place the price of land in the central parts of London at a much lower price than 10,000*l.* per acre. From two and a half to five times that amount is no unfrequent valuation—without going to such extreme cases as the site of St. Mildred's Church. The price of 9,680*l.* per acre amounts to 2*l.* per square yard. If we allow for five stories, we have a sum of 8s. per square yard, or 5*l.* 12s. per room to add to the cost of building. This gives a cost price of 57*l.* 13s. 8d. per tenement. The ordinary return which is regarded as the limit for the productive employment of capital in building is 8*l.* per cent. To keep quite within bounds, let us reduce this rate to 7½ per cent. We thus have a charge of 4*l.* 5s. 9d. per room per annum, or about 1s. 8d. per week, required for the remuneration of the capitalist, apart from any charges for collecting, watching, or other purposes. Thus, in the absence of some aid or supplement, from some source not yet indicated, we cannot calculate on being able to offer lofty tenements of a substantial sort, which shall contain 500 cubic feet of space per inhabitant, for a less sum than 7*l.* 8s. 3d. per annum, or 2s. 9½d. per week for each room accommodating 2½ residents, for rent and rates alone, exclusive of any house tax or incidental charges of collection or of maintenance.

Now if, by going to work in a way that is consistent with the stability of building, and with the fulfilment of sanitary requirements, we find that the rent, rates, and water supply, and lighting of a single room, averaging two and a half occupants, come to 7*l.* 8s. 3d. per annum, exclusive of taxes, watching, warming, and any other contingent expenses, how does this tally with the needs, and with the means, of the population we are seeking to provide for? And what remains for those who cannot pay the sum of fifty-nine shillings per head per annum for rent? If we find that we can reduce the cost of building as low as 5d. per cubic foot,—a rate that we believe will cover a very tidy sort of cottage,—we shall reduce the rent and ground-rent to less than a shilling per room per week,—the rates thus forming a higher charge than the rent. Thus it is obvious that a very serious question as to the rating of houses built in lofty blocks for the accommodation of the poor has to be discussed, independently of the structural problem of the least costly mode of construction. These questions must be put in time, and must be considered in time. If we proceed without looking the difficulties of the case fairly in the face, we shall be entering on a sea of troubles. We shall be placing a considerable portion of the population,—a portion which is so helpless as to demand the utmost consideration and regard,—in direct collision with the law. We shall be re-enacting, in the heart of the metropolis, the Irish ejections described by the novelist. If the life is more than food, and the body more than raiment, attainable shelter is more than housing, which, however suitable from a secondary point of view, is unattainable by reason of its cost.

On moving the second reading of the Metropolitan Improvements Bill, the Duke of Richmond and Gordon stated that arrangements were contemplated by the measure which would provide for proper sanitary arrangements in the houses to be erected. The Earl of Shaftesbury, in thanking the Government for thus far attending to the suggestions he had previously made, took occasion again to urge the duty of timely notice to those who were to be displaced, and of provision for their immediate shelter. The two conversations in the House of Lords show what can be effected by one earnest man. We trust that the question of cost of lodging will receive an equal degree of intelligent attention and support.

PROPORTION IN THE FINE ARTS.

UNDER this heading we gave, in a recent number, a *resumé* of the substance of a lecture delivered by Mr. Cave Thomas, at a meeting of the "Society for the Encouragement of the Fine Arts," on the 1st ult., the main object of which was, in recommending a theory of beauty in art with which the lecturer's name has been previously connected, to show that art was not, or need not be, tentative in its endeavour after excellence, and that, in fact, there was a sure guide for the artist in securing the most beautiful forms and proportions in his productions, if only he would avail himself of it.

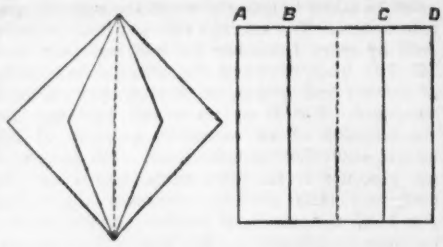
The discussion of this idea, which in one shape or another has been not unfrequently brought forward, is in process of being a good deal revived just at present. Only a week or two previously, in the same room, the members of the Architectural Association listened to a lecture from an able architect on the theory of definite and fixed proportions which should pervade Gothic buildings, and upon which designs ought to be constructed, instead of on what was referred to as *tâtonnement*. This special application of a theory of proportion in architectural design we do not intend here to dwell upon, only referring to the fact of the two lectures having been delivered within so short a period of each other as apparently significant of a movement of interest in the subject. The last word in regard to the subject of architectural proportions, treated of by Mr. Pullan, has not, we think, been said; but it is, in fact, a different kind of consideration from that brought forward by Mr. Cave Thomas. It is in reality only concerned with a method of working out a design the leading *modulus* of which has been determined on; it is a process rather than a principle; whereas the lecture by Mr. Thomas attempted the establishment of a definite principle of design, a standard whereby the better or worse, the beautiful or the not beautiful, were to be tested.

This principle, briefly expressed in the summary of the lecture (page 570, *ante*), was offered to his audience, apparently, by Mr. Thomas as a certain and almost unimpeachable deduction derived from years of study of the subject; and we understand that, contrary to the usual custom at the meeting of the Society, before which it was delivered, discussion on the lecturer's views was politely prohibited. With every recognition of the ability of Mr. Thomas both as an artist and a philosophiser on art, we can scarcely, however, follow this example, or allow the statement of his theory to pass in our columns without a word or two of examination in regard to a view of the basis of art which seems to us very much open to question.

"The golden mean" is, according to Mr. Thomas, the end and aim of art. That which is most beautiful, most satisfying to the mind and the eye is that which is the central form between all excesses on the one hand, and deficiencies on the other hand. All criticism of art really resolves itself, he thinks, into an act of mental mensuration. With this definition of criticism we do not quarrel, as expressed in these words, which it will be observed are capable of a very elastic meaning, and really express very well the true function of criticism, which is first to ascertain or consider what the aim of the artist has been, and then how far he has in any respect either exceeded or fallen short of that aim. But the application of a system of estimating or finding the mean, as a guide in artistic production, is complicated by other considerations.

It appears to us that Mr. Thomas uses the expressions "proportion" and "mean" to express two things which are radically different in their nature, and which are to be estimated in a very different manner. One of the illustrations which he gave (not referred to in the summary furnished to us) consisted in supposing that we had placed side by side a heavy, bulky, over-muscular figure, such as would be taken to represent an Atlas or a Hercules, and a thin, wiry figure, built for speed alone, such as some of the well-known types of the figure of Mercury. Both these err, and are only partially satisfactory, because both are excessive in opposite directions. Alter by degrees that which strikes one as out of balance in either of them; refine down by degrees the superabundant muscle and development of Atlas; add by degrees more flesh, and fuller and finer contours, to the figure of the Mercury; and the two gradually approach each other in form, and at the point where they become similar we find the characteristics and proportions of such a form as the Antinöus, which is admitted on all hands to be a form of almost perfect beauty and symmetry. That is not a bad illustration of the process of selecting types from nature. In connexion with the subject, reference was made to the fact that the individuals of any species of animal which are the most beautiful are those which exhibit the mean between any excess or deficiency in proportion. And so we might, as Mr. Bonomi pointed out in a letter in our columns not long since, obtain valuable conclusions as to the correct standard of the human figure, if we could induce the Government to let us have for this purpose a synoptical table of the sizes and proportions of the men in our Guards' regiments, who exhibit probably the best average of the human figure which is attainable from the living model in the present day. So, also, there is some reason to think the Greeks carried on their observations of the figure, observing what was common to the best figures, accepting that and rejecting the points which were only exceptional. All this is perfectly reasonable as a means of arriving at a general idea of the standard or normal proportion of the human figure, for example; and there is something in the process of thus eliminating the best out of a number of varied types which reminds one of Darwin's generalisation in science, and suggests the idea that in art, as in human and animal life in unrestricted conditions, there is a "survival of the fittest."

But the idea of the mean assumes a different aspect when we come to any attempt to reduce it to figures or to a calculable form. Mr. Thomas illustrated his lecture by some simple diagrams showing this search for the golden mean in a geometrical aspect. In the following two figures, for instance, it was stated that the most pleasing and satisfactory proportion of parallelogram was that included within the lines *B* and *C* in fig. 1, in which *B* and *C* stood at equal distances from the boundary lines and the centre line of the complete square; and fig. 2, in which the area of the inner diamond is equal to the sum of the two areas between it and the rhomboid, is supposed in like manner to show the most pleasing proportion for that style of figure. This illustration



was not accidental to the lecture, but was part of the reasoning by which the argument was built up. But does not Mr. Thomas perceive that in this case he is reasoning by analogy between two things which are totally distinct? The beauty of the human figure, for example, is in its expression as a living, acting, and thinking organism; and seeing that all such organisms are not equally expressive or equally beautiful, we may arrive by comparison and selection at certain conclusions as to the finest type, and that fitted to be the medium of the highest art expression. But a geometrical form belongs to quite a different category of things. A geometrical form or proportion has no expression, except in relation to some function which it fulfils. Abstractedly, it is almost impossible to say that one is more beautiful than another; and as to the illustrations given, our own eyes contradict the truth of them every day. As to the "golden mean" diamond shape, for instance, to take a very familiar example; in the leaded panes of Gothic windows the proportion which looks best, and has been most employed both in old and new buildings, will be found, we suspect, if the matter be worked out with mathematical accuracy, to be a broader and shorter form in almost all cases. As to the parallelogram, fifty instances suggest themselves at once in contradiction to Mr. Thomas's mean form. In fact, proportions in geometrical forms are beautiful or not in relation to their position and use. The Doric column is a beautifully proportioned thing in its own place on a large scale. Put it to support the horizontal rail of a balustrade, and it looks a mean kind of stick. Magnify the baluster, and place it as a column in the temple, and it will look hideous. Each form is proportioned to its position, to the work it has to do, to the scale of the building, and to what we know of the nature and tenacity of the material in which it is executed, and which, being a constant, will not admit of the same proportionate tenuity on a small scale as on a large one. These and a score of other considerations, sometimes too delicate for analysis, and rather to be felt than described, go to determine whether a certain form in a certain position is well proportioned or not.

Then there is the question of the physical basis of certain arts, which comes to be imported into the subject. It was shown "that there are common harmonic principles underlying all the arts." If words mean anything, this cannot be the case. Where is the common harmonic principle between music and sculpture, for instance? There is a common harmonic basis underlying music and painting, inasmuch as there are fixed and mathematically demonstrable ratios existing between different sounds and between different colours, and the proportionate relations are, to a certain extent, the same in sound and in colour. But does any painter,—does Mr. Thomas himself,—arrange the colours on his canvas on the basis of a calculation of the harmonic ratio of the vibrations of the light reflected by the different pigments? The painter arranges and combines them, no doubt, to produce a harmonious effect, and the knowledge of the numerical relations of colours may explain to him, if he cares to know, why such and such combinations are pleasing; to a certain extent, at least, for we do not believe such knowledge will explain it entirely. But after all, the practical outcome of it is, that it is the painter's eye and feeling that do the work, not his power of calculation. And so with music, to which Mr. Thomas appealed in support of his views. There are certain very interesting facts in regard to the physical basis of music, and which connect it in one sense physically with colour. There is the fact, for instance, that the series of sounds which form the "harmonics" to any note, have their proportionate vibrations in an arithmetical ratio.* There is the fact, that only one combination of sounds can be permanently satisfying to the ear, as the final chord of a piece of music, and that the vibrations of its three initial component sounds are as 4, 5, 6. But these facts have little or nothing to do with music *as an art*. The first of them, which is exciting much interest now, was absolutely unknown to the great composers. Their works were quite independent of it, just as the colouring of Titian is quite independent of any knowledge of the vibratory proportions of colour. Such knowledge is very interesting, it may be very valuable in more ways than perhaps we know of at present; but it will never make a man an artist. It is worth notice that Bacon, whose opinion should at least go for something, draws the very same comparison that Mr. Thomas draws, between painting and music, but with the opposite conclusion. In his essay "On Beauty," he refers (whether correctly or not is no matter here) to Apelles and Albert Dürer as artists of whom "the one would make a personage by geometrical proportions, and the other by taking the best parts out of divers faces to make one excellent"; and he adds, dryly, that such personages "would please nobody but the painter who made them." Then he proceeds,—"Not but that I think a painter may make a better face than ever was, but he must do it by a kind of felicity (as a musician that maketh an excellent air in music) and not by rule." And this we believe to be "the truth on't." Nor do we suppose that Mr. Cave Thomas would wish to be understood as conveying the idea that any one by mere application in the path of his theories and instructions could "arrive," as the French say, to produce works of art of the highest class. But we must say that his lecture, as delivered, was calculated to produce that idea in the minds of "weak brethren" who may have heard it; and that he is himself in danger of being led away by a theory which, like most theories of the kind, is, in regard to actual artistic and expressive power, an *ignis fatuus*, leading the artist away from what should be his true aim. And for Mr. Cave Thomas himself, we think that we are paying him no ill compliment, and giving him no bad advice, in saying that we rather wish he would paint more, and theorise less.

NEW SCHOOLS AT OXFORD.

THE new University schools have been finally voted by Convocation. The design selected by a delegacy appointed in November, 1875, is that of Mr. T. Graham Jackson, fellow of Wadham College; Messrs. Bodley, Champneys, Deane, and J. O. Scott having also engaged in the competition. The general arrangement is that of a spacious quadrangle, surrounded on three sides by buildings two stories high, containing the examination schools and their offices,—viz., on the ground floor nine *vivâ voce* schools, with a small private room for examiners attached to each, and on the first floor three large writing schools (for 200, 200, and 120 candidates respectively), with a tenth *vivâ voce* school and two examiners' rooms. In the writing schools 25 square feet is allowed for each candidate (the space in the examination rooms of the University of London being only 19½ square feet); and the cubical air space obtained by lifting their ceilings into the roof will insure the necessary condition of wholesomeness which is so conspicuously absent from the present schools. The fourth side of the quadrangle, between the schools proper and High-street, will be occupied by a building with the principal frontage to the street, containing a large and lofty writing-hall, with offices, &c. The material is to be stone. The design is described by the architect as "Gothic in feeling and motive," but he has chosen in preference to Early Gothic work "that late eclectic style of which Oxford and Cambridge contain admirable examples."

* To put it in a more popular form: if the dampers of a piano are raised and a note in the lower register of the instrument struck forcibly, certain strings, and no others will vibrate and sound in sympathy with the string originally sounded, and their vibrations will be, respectively, to those of the originating sound, as 2, 3, 4, 5, 6, 7, to 1. Mr. Cave Thomas seemed just about to refer to this in his lecture, but he spoke, instead, of the vibrations of a note to its *octave* being as 1 to 2. So they are, but the remaining octaves follow in *geometrical* progression—4, 8, 16, &c. It is the "harmonics" that follow an arithmetical progression.

PAINTINGS ON CHINA.

IN the same gallery where was exhibited the collection of stoneware from the Lambeth potteries, of which we have said a few words, Messrs. Howell & James now exhibit, for the first time, a collection of artistic painting on china, for the best productions in which branch of art they have offered prizes and medals, to which a definite value is attached from the fact that these have been adjudged upon the decision of two artists of recognised position, Mr. Poynter and Mr. E. W. Cooke.

A certain proportion of the objects in this collection ought not to have been produced at all. Any attempt at landscape or realistic interiors is out of place in china painting, serving only to show what the material can *not* do. Such things as the views in Falaise and Rouen (20 and 29), for instance, are complete mistakes; no aërial perspective can be realised in them; they only look coarse and inartistic. The same may be said of other productions, which have obtained prizes as landscape subjects. It may be questioned also, apart from the suitability of the material, whether such subjects are not unsuited for the decorative treatment of a dish or plate which, though it may be hung up as a picture, of course, is always supposed to be capable of practical use as a receptacle for something; and to put a landscape or an interior in realistic perspective upon it is out of place; it should have a flat and conventional treatment. The incapability of the material is, however, the more important drawback; and for the same reason we object to the attempt to finish heads with life-like realism in the same way as in oil-painting; the girls' heads in Nos. 5 and 7, for instance, and others of the same type here, are what no one of fastidious artistic taste would care to possess. Mere sprigs of flowers, with birds and insects grouped with them, may be treated more realistically with good effect, as they form, when so dissociated from any of their natural surroundings, a kind of conventionalism in themselves. Of this class Miss Merry's two designs (22, 23) are good, and Miss Maplestone's "Purple Iris" on an orange ground (164); Miss Spiers's "Summer," a group of flowers and a thrush (171); Miss Butler's "Lilies and Birds" (175); and others. Then it is possible to arrange subjects of this kind so as to express, in a decorative manner, a certain distinct sentiment, as has been rather well done by Mr. Haines in a design called "Evening" (68), where flowers and birds are delineated against a ground which suggests in tone and arrangement the evening sky, without any attempt at actual landscape effect or perspective.

Among the examples in which figure subjects are introduced we must recognise the merit of that by which Miss Linnie Watt has gained the 15-guinea prize for the best work by professional artists, and which, though it comes in the category of subjects we have mentioned as not really suitable for the style of art, is much more satisfactory to the judgment than some others of the figure subjects, from the richness of texture preserved, quite different from that hard mechanic look which some of the specimens of this class present. Lady Rawlinson's head of "Rubens" (72), drawn and shaded in monochrome, and with a bold and effective border consisting of an orange scroll on a purple ground, shows true artistic feeling; so does Mr. Holiday's drawing of "The Arts" (180), showing figures of natural flesh-tints on a green ground conventionally representing foliage. Mr. H. Ryland's small plate, with a "Venetian Head" (188), lined in blue, against a light and dark ground, dividing the plate irregularly into halves, and with a very well-designed little border, is a model of the kind of way in which figure subjects may be effectively treated in this material. There are some other plates of figure subjects which are in a good style and commendable, but which we decline to particularise, because they are sent with the name of Somebody "& Co.," whom we are not going to advertise. Who is "Co.," and at what school of art did he study? We do not recognise "Co." as an artist. When we see a design we wish to know who invented and drew it, not who "exploited" it. We may observe that there are a good many productions of the Lambeth School of Art hung up, not for competition, but just to show what the school is doing. We take it that the Lambeth School of Art is on the wrong track in regard to subjects for painting on china, and is far too ambitious in its tendencies. Let the students attempt less on china, and they will do more.

In purely ornamental design (and we confess our sympathies go most with that) we notice some beautiful bits of work; scarcely anything, perhaps, so good as Miss Faulkener's "Decorative Plate" (173), with a design symmetrically unsymmetrical, as one may say, of blue leaves and stalks intertwining, with orange buds and centres to the flowers,—a most refined little bit both in tone and design. "Conventional Floral Decoration," by Mr. Church (88), has the same kind of merit. Miss Lewis's "Kingfisher and Wild Flowers" (316) is notable for the very original and artistic border, effective both in line and colour; and Mr. Haines, whose name we have mentioned before, and who seems thoroughly to know what he is about, has a beautiful "Conventional Design" (375) of leaves and broad yellow flowers, with a border of very dark mottled green: as a bit of colour this is one of the best things, as well as in style. M. Huart's "Persian Design" (449), and Mr. Payard's designs under the same title, though in a very different style (451, 476), are exceedingly good; the former, however, belongs in fact to the style now recognised as Rhodian. A little conventional design for "Peace," by Miss Jacobs (390), shows some thought and a true style.

Four more of Mr. Tinworth's little terra-cotta basreliefs are exhibited, and are as clever as those we have previously seen; in spirit and point the one representing the Jews who had sworn "not to eat or drink till they had killed Paul" is especially admirable. The same artist has furnished the design for a large stoneware vase, called "The Solomon Vase," the leading feature of which is a set of little figures in niches round the broadest part of the vase, illustrating in various ways the verses of Ecclesiastes, following the sentence, "For everything there is a season." One or two of the illustrations strike one as oddly conceived,—for instance, "A Time to Embrace" is represented by "the Shunamite and her son," and the opposing clause, "A Time to Refrain from Embracing," by "Joseph in Potiphar's House" (!), which is to the point, certainly, in a way. But in outline, colour, and detail this vase is a noble production of the art, and worth looking at in itself.

THE HINDOO AND HIS ARCHITECTURE, AT SOUTH KENSINGTON.

VERY much is sure to be written and said about the unique collection of Hindoo curiosities of all kinds, which have been acquired by the Prince of Wales during his late tour in India, and which are now exhibiting, through his Royal Highness's considerate kindness, at South Kensington. The objects are, doubtless, in themselves enough to attract a large amount of public attention, but varied comments on them will certainly attract more and more of detailed attention and study. In the rooms preceding those which contain the Prince's collection are many fragments of sculptured architecture, together with photographs, forming part of the India Museum, and we propose to look at a few of them, especially the architectural ones, and to point to some lessons which they may possibly teach. The history of architecture has yet to be adequately written, and its very foundations and first beginnings need to be dug into by dint of thorough and laborious work and research. Here, in this vast continent of India, with its thousands of square miles, with its millions of inhabitants, its all but perfect and primitive language, and its past history stretching back into times beyond record, is to be found a field of inquiry not to be surpassed, if it can be equalled in interest elsewhere. We have often regretted that Humboldt—that first of travellers—did not accomplish for India what he did for America, and the kingdom of New Spain. How many books there are about "India," none need to be told, but unhappily the information they afford is but slight. We want insight into the place. Here in this collection of facts there is at least a something certain to go by.

In the first place, it is to be observed that the architectural section of this display of fine things is a good deal scattered about the rooms, the object in the arrangement being, perhaps necessarily, to keep the individual collections, as collections, together. We must needs, therefore, search the galleries many times before getting the "architecture" well together in the mind's eye. Then, of course, it is very imperfect and fragmentary in character, coming from all parts, and as applied to all purposes. The collection includes many notable specimens. We are here referring to actual fragments. There are also many very valuable drawings, both native and otherwise, which tell of architectural arrangements, and with their details. We but glance at the vast subject, hardly knowing where to begin, the objects being so scattered.

Numbered 19 is a native drawing giving a fair idea of that essentially Oriental display,—a Royal and Imperial audience, such as might have been seen in the days of the great Akbar, or Aurungzebe. It, at times, is thought that all Oriental things are to be infinitely improved by close and intimate contact with things of "Western" invention and growth. Those who think thus should examine in detail this interesting sketch, and compare what is in it, especially as to the costumes, with those which are now taking the place of them. It is like so much else that is valuable of the past, it cannot return, but it is worth the long looking at for many reasons! The architecture of it, too, is noteworthy, and shows how all things, if left to themselves, grow together and harmonise with each other; the men and women, the dresses they wear, and the dwellings they live in. Such a drawing as this, with many others scattered about, will afford insight into the life of Indian royalty in past days. And reference to many of the actual objects collected together here and there from the palaces and other places, and given by the successors of those who built the throne-room represented, will make the impression the drawing makes on the mind the more vivid and real. What would Imperial Akbar, one of the strong men of the East, say could he but see this display as we now see it?

Not far from this drawing are two models in wood of painted ceilings, well worth note and study; in one of them circular mirrors are most ingeniously inserted as panels, and must have, *in situ*, a striking effect, not interfering with the idea of a ceiling, or roof, as such, but simply adding to the effect and novelty of it. The colour of these ceilings is of that bright, though quiet kind, which the Hindoo artist and workman seems to create instinctively.

While on the matter of ceilings, it may be well to look at some sunk panels, wonderful in ingenuity of design, from the Upper Temple, Pelwarrah. Such work shows how thoroughly the Hindoo architect understood his special work, and style of architecture. No labour would seem ever to have been spared in the working out of an Hindoo art thought. Ceilings there are, too, in abundance here, in photographic illustrations, drawn from the temples and palaces, and well worth looking at, thus to get at *general* ideas, and at the position of the architectural fragments.

A model of a complete ceiling, as it now exists, it is to be hoped, at Lahore, should be noticed; it is in all ways worth attentive study.

Passing from the *ceilings*, on which really a volume might be written, we may come to the perforated panelling which forms so striking a feature in Mahometan Hindoo architecture. In these panels the quiet and skilful labour of the Hindoo workman shines conspicuously. There is no end to the variety of the interlacing patterns, and no end, as it would seem, to the *labour* involved in their execution. There is a "lattice," in blue stone, in room No. 1, from Keroly, and a square panel in stone admirably cut. A panel also in black marble with ivory inlaid letters from Malwa. These elaborate and ingenious works of art cannot well be copied, perhaps not at all, by our workmen, but they may be looked at, and studied, to learn what is possible, and how much a people may do without any of our *mechanical* helps. The reader may here perhaps be usefully reminded that these things we have noted are not among the brightest and most attractive in this magnificent display of Indian work, but they are not the less notable and worthy of study. Indeed, we may affirm generally that it is among the duller objects that the most characteristic, and truly Hindoo and native art action shows itself. It is important to bear this fact well in mind, for the very conspicuous, and very bright, and highly-coloured objects, are "Europeanised," and have indeed come from India, but from our art schools as well. Is it gain or loss? We have thought, as more immediately interesting, in this place, to confine our thoughts, having already spoken of the Prince's collection generally, to the architectural phase of the collection, which, though not quite so attractive as the gorgeous coloured woven fabrics which hang on the walls, is quite as important and as interesting if looked at closely enough and with patience. Indeed if

we want to come to a thorough understanding of the art of India and the art power of the native races who inhabit the country and have inhabited it for so many ages, we must begin with the architecture—with common house and temple building, and even with cave making and forming. It is difficult to say where "architecture" really begins; but it is certain that some kind of habitation, however rude, to *house* the man must have preceded the building of a temple, however necessary that might be. We are told that a "damp wretched hut," consisting of but one room, is the usual dwelling of the poor in Bengal. Even this, therefore, though not architecture in the common acceptation of that word, is at least *building* or construction, rude as it is, and simple in the putting together, and the palace itself springs up out of this. We thus get to the origin sometimes of a native style of architecture, and there is in this very collection a singular illustration of architectural growth. It needs close study to be fully appreciated.

We allude to a careful and measured drawing, both plan and elevation, of the Amravâti Tope, by Sir Walter Elliott. The plan, unfortunately, though an elaborate one, has no references, so that a good deal may be missed in the study of it, and no section is given, but what there is, is curious enough. The Tope itself was, in all probability, like others, originally surrounded by wooden posts firmly set into the ground at regular distances, and the spaces between these posts were then filled in with wooden strips interlacing them like basket-work. Indeed, it would seem that the mode of work adopted in the forming a basket was directly imitated, and made to do constructional duty in the building of this wooden wall. All this simple construction has, in this Tope wall, been translated into stone, and, with its gateway (quite a study in itself), was elaborately carved. It shows an architectural growth, and how an "architecture" may possibly spring into existence out of the very commonest and most obvious constructional forms. No one will dispute the applicability of the word *architecture* to the forms as seen in this drawing; but few would seek for their origin in an osier basket! We may pass from this rude architecture to some examples of a far more elaborate kind, and will wonder at the ingenuity and inventive power of the strange people who created them. There are some columns magnificently cut, with colossal figures from the Tennevelly Pagoda, Southern India. These are seen in a photograph only, it is true; but they will evidence to many how individualised races work, each one in its own way. Neither Assyria nor Egypt has done better. The Seringham Pagoda, "horse-court," should be noted, and the wall frescoes. These, with others, show how very much there is yet to be found in Hindoo art and architecture, and how architecture, as a fine art, develops itself and *grows* when sufficiently isolated.

This fine collection suffers, as we have said, a little from the way in which it is necessarily exhibited. We should like to see all the architecture together, and in one room, and scientifically arranged, the varied details illustrating the general forms, both as seen in drawings and in models,—the sculpture here forming part, and an essential part, of the architecture, and growing out of it. It might be a work of time and industry to do this well, but when done it would, to a few at least, throw not a little light on the growth of architectural forms. It is to be remembered that "ruins" exist all over India, many buried in the thick jungle, and that we possess here but a fragment or two of them. Their extent may be judged of from the *models* here to be seen of but two or three groups of them. These are in Room II., and will serve to show what this architecture of the Hindoo looks like when grouped together, in lengths of buildings, towers, and courts, one beyond another. Such truly architectural arrangements are hardly to be imagined in these days as having reality, and still less use. Then the whole mass of these buildings was covered, both inside and out, with the most elaborate carving and stone writing, like an MS., and doubtless as capable of being read as we now read a printed book. To us the forms as here seen in detached fragments are strange and unintelligible enough, and we may dream anything about them, and their precise meaning may never be found, but to those who wrote on the walls the writing was plain, without doubt. If any spectator, looking at this display of the works of a bygone day, will compare it, architecturally and otherwise, with what he sees around him, he will not, surely, have visited this fine show in vain.

THE REMONSTRANCE OF M. SCRIBLERUS THE YOUNGER WITH THE CHIEFS OF THE ROYAL ACADEMY.

IT hath been long (my dear Academicians) the subject of my concern and surprise, that whereas numberless authors have digested the Catalogues of ancient Exhibitions, there hath not risen up among us one person so publick spirited, as to perform the like for the modern. Although it is universally known, that our every way industrious artists, both in the quantity of their productions, and in the velocity of their execution, do so infinitely excel the ancients. Therefore to supply this defect I purpose to analyse some of the poetry and philosophy of the Royal Academy Catalogue, and to collect sundry critical observations, which have not heretofore been printed, upon the practice of the deep geniuses of your body; imitating herein my predecessor, the secretary of the renowned *Temple:* and in this my undertaking I am the more animated, as I expect more success than has attended that great Critic, since his wit, though it might be brilliant, has ever been slackly understood, and his sarcasm however just appreciated only by a very small number.

If we visit those Exhibitions of Antiquity, which have not been entirely dismantled by the professional Iconoclast, we shall find Painting and Sculpture arrayed as the handmaidens of Architecture; and, withal, possessed of a mien unassuming, and graceful. Therefore it hath been thought that the higher arts were kept in bondage by the ancients, under the rule of Mechanical learning. The emancipation by the moderns of Painting and Sculpture from the thraldom which they endured in so confined an arena as the Parthenon at Athens, or in some of the Roman Temples and publick monuments, hath opened to them an extended career. For in such buildings, the inspirations of the artist were degraded to purposes of meer utility, and their employment directed by that pestilent foe to High Art, and destroyer of fine figures, which is known by the name of Common Sense. But in your Exhibitions (my dear Academicians) the rein is given to originality, and in your Catalogues to versatility. It is your custom to mingle, in long and lofty Galleries, bits of the most various and discordant kinds, landscape, history, portraits, animals; and by strong oppositions of colours, and contrariety of images, to ensure the greatest happiness of the greatest number, by selling as many works as the public can be induced to buy.

It may be expected that like other Critics, in speaking of the most popular Exhibition of modern times, I should particularize the best pictures of the year, for the guidance of merchant princes at a distance, and of successful stock-jobbers at home. But this hath been done with completeness, while even the ideas of the artist were flowing from his brush to the canvas; and the publick prints have announced, several months before the annual invocation of the Goddess in March, how prolific has been the brain of Jove. The short limits of this discourse will not allow me to treat of all the grounds upon which I have founded my remonstrance. Therefore I shall subdivide it, as my predecessor did a similar one, addressed to the poets of our nation; and as he discriminated, in a *Catalogue of books*, between the Florid, the Pert, the Alamode, the Finical and the Cumbrous, so, in your *Catalogue of pictures*, I shall illustrate the Inexplicable, the Statistical, the Realistical, the Comical, and the Classical.

1. THE INEXPLICABLE.

One of the sources of the Unique or Singular is to be found in a complete oblivion of everything that has gone before, and another in a total disregard of whatever may come after. An explanatory quotation, which is to serve for purposes of description, must not be too clear, lest it seem vulgar; for obscurity bestows a cast of the wonderful, and throws an oracular dignity, which hath no meaning. For example: you paint a pretty English face, with an open mouth, disclosing the sweetest set of teeth that ever Nature developed, or Dentist mounted; you clap it within a grille of iron bars; and, with a monk touching the foot of a crucifix, you obtain a representation of "Below the Doge's Palace at Venice in the Fifteenth Century" (350); then, to make doubly sure, you add, in this manner,

> "And ne'er
> In madlier accents rose despair."

Or, you take as a model some low type of female beauty, from the coasts of Asia-Minor or Southern Italy; you emphasize the curve of the nose, the curl of the lip, and an almost absence of forehead; you paint only her head and shoulders; and with the skin of some animal, and an armlet, in the shape of an asp, you produce:—"Cleopatra" (1282).

Or, if your model be some young and innocent-looking girl, you take the opportunity of imparting to her a useful moral lesson, such as (1320),—

> "Maidens should be mild and meek,
> Swift to hear and slow to speak."

Because there is no fear of any one else interpreting your covert meaning.

2. THE STATISTICAL.

While the style to which I have referred seeks to confuse, this aims at giving instruction. Having made a charming picture of "A Port on the Zuyder Zee" (573), you swell the size of the catalogue by adding gratuitously:—"This inland sea is about to be drained by the Dutch Government."

[In the preceding divisions I have thought fit to treat of the Catalogue; and in the following ones I shall speak more particularly of the pictures].

3. THE REALISTICAL.

"The Hymn of the Last Supper" (579) is in this Style. Nothing seems more plain than that Europe hath been long weary of the Conventional manner, and that as we have had "Passion Plays," complete in character and costume, so we must be prepared to find the idealistic illustration of Holy Writ, superseded by the portrayal of realities; it being certain: our knowledge of the ancients justifies a presumption that the modern painter hath the means, at least, of learning the archæology of the First Century. Human nature itself favours the change: the taste of the *bathos* is implanted in the soul of man, and if the ancient painters were perverted by custom to relish the sublime, very few people understood them; but on the contrary regarded their works with the unprejudiced eyes of children. Modern painters work up, or rather down, to the taste and comprehension of the people. But to descend to the *bathos* in one particular, argues the necessity of discovering the "profound" in all. If our painter hath with propriety laid the scene of the Last Supper in a wooden hut (of somewhat colossal dimensions), and furnished it with an oddly-shaped table of rude and elaborate workmanship, he hath at the same time introduced a cloth so white and unsullied, as to be fit for the palace of kings. Moreover, both table and cloth are anachronisms, rendered the more inconsistent by the presence of three-legged stools. In the First Century it was the custom, even in Athens and Rome, to lie extended upon couches (witness the term, "banquet"), during the hours of repast. And it hath struck me that if in Asia, where chairs and tables are even now uncommon, the fashions of Rome were sometimes adopted by the Rich, the habits of nature were always practised by the Poor; and that then as now the inferior inhabitants of India, Syria, and Arabia used the earth for a table, and in lieu of benches . . . . . (*hiatus in MS.*). I am also constrained to believe that before the descent of the Barbarians, the colour of the peoples of Western Asia and of Southern Europe was neither brown nor red; and although it hath been supposed that Jupiter was of a carroty hue, it cannot be ethnologically exact, to paint the ancients who inhabited those countries with hair of that colour, as in "The Hymn of the Last Supper"; unless indeed the custom in India, at the present hour, of dyeing red the blue-black hair of children, obtained in Syria among men in earlier times.

4. THE COMICAL.

Characteristical of this Style is the portrait of "His Reverence" (1346): that of a priest lifting his hat to two unsophisticated girls. In order to do so, he has turned upon the Critics that side of His Reverence, which it hath ever been deemed impolitic to present either to friend or foe. For the one is ungracious, and the other cowardly; but our painter perhaps argues that an action, which in a man would be resented as offensive, may in an ecclesiastic be regarded as comical. Nor are the accessories of the picture opposed to such an hypothesis, for as in representations of *Orgies à la Régent*, the pleasantries indulged in by the guests were reflected in the images which

cover the walls and the furniture, so the haze, which obscures the action of His Reverence, is reflected in the surrounding Architecture. Therein the base-mouldings of a column resemble fungus which clings to the neck of a bottle; and while the distant street, which is at a stone's throw, is enveloped in mist, some of the steps, that His Reverence is about to mount, are without a joint, implying one of two things: either that they consist of long slabs of stone, or are composed of the best Parian cement.

5. THE CLASSICAL.

If any one doubt that I have an excuse for making these observations, let him seek it in this concluding division. Among the ancients, it was the province of Painting and Sculpture to adorn Architecture, but among the moderns, Architecture and Sculpture are impressed into the service of the painter: and in "Atalanta's Race" (943) he has treated both, with a light heart and a heavy hand. I have sought in vain to learn what relation the colossal column (in the middle distance), which is partly hidden by *Atalanta* (in the foreground), bears to the Ionic temple on the left; and if it form part of another temple, I cannot perceive (even with the Erechtheum in my mind's eye) where the rest of that said temple is situated. Nor is the subtlety of the Greek acknowledged in the divers bases and cornices and such architectural devices, for the painter hath so placed them that their projection would have injured the feet and thighs of the passer-by, or torn his sandals and his robe. As for the glare of the marble, it hath been left in its natural harshness, which (it is well known) was softened by the ancients with colour. And, at the same time, so little has the author of "Atalanta's Race" appreciated the minuteness with which optical illusion was counteracted by them in the best period, that the distant canopy, which covers the judge, is supported by columns without *entasis*, and crowned with a pediment whose raking lines have no curve.

The defect of whiteness, which the moderns love, is also exaggerated in a view of Thebes in "The Daphnephoria" (241); and though I grant the excellence of that picture, I herein enter a solemn protest against the practice of giving pretty English features, and white forms, to slave-girls, who had never been permitted to wander far from their masters, had they been only half as charming as it is the custom of the moderns to depict them. Witness the habits of nations, who, at the present day, are not totally removed in thought and inclination from the ancient Greek.

As I have thought fit to censure poetical licence, so I will condemn artistic solecism. The painter of "An Audience at Agrippa's" (249), wishes us to believe that his *Agrippa* is he, who came into the world 63 years before our Lord; and with whose connivance was erected in Rome that Pantheon, in which (Mr. *Addison* said) the imagination is filled with something great and amazing. Therefore it were well had our painter reflected that to draw the marble walls of *Agrippa's* house with gaping joints, that were newly put together, and with worn cornices, that no elbow approached, exactly as the rubbings and concussions of Time hath handed both to us, is to commit a blunder, which, in the contests and dissentions of Athens and Rome, was thought to be worse than a Crime. In *Agrippa's* house, as our painter hath imagined it, the arch is moulded and jointed, not as ancient Romans would have constructed it; but as it was imitated by the architects of the Most Christian King, in the Saloons of Versailles, and the Pavilions of Marly. The *extrados* of the Roman arch was truly defined; and when, as often happened, the marble face was a veneer, laid against a core of bricks, its jointing was never dissembled, like that of the moderns, in numerous edifices they erect, under a system of false economy and immoral speculation.

My master, the Dean, described the Critic as a collector of people's faults; and it was a pretty conceit of Mr. *Fielding*, to couple the professions of Criticism and Christianity, when he said: if we judge according to the sentiments of some Critics and of some Christians, no author will be saved in this world, and no man in the next. I have not however failed to relish many beauties, which (my dear Academicians) I encountered in your pictures, while searching after defects; but of them it is not my present intention to treat. I have thought fit to warn the proper authorities how baneful an effect the manner of exhibiting those beauties hath upon Critics who honestly go to admire them. The Geometrician in delineating the great examples of ancient Architecture draws them to a uniform scale: for facilitating reference and inviting comparison. But in an Exhibition of the Royal Academy, a "View of the Queen's Apartment at Lilliput" rubs frames with "Gulliver and the Maids of Honour in Brobdingnag," a hazard not unaccompanied with injustice. For as beauty ever delights in the companionship of a foil, so the Academician seeks a contrast of mediocrity to attract the wit, and dissipate the bile of assailants. Because no man can penetrate your Galleries (my dear Academicians) without being seized with a megrim; and when that hath arrived, I would most fervently enjoin the visitor to seek repose in the room devoted to Architecture. There, Venus, eager for flirtation, may lure Adonis, not now unready. Nor hath the publick, which seldom judges inconsistently with itself, blame for this. Architects have not known how to touch that string in the harmony of human understanding, which, in most visitors to the Royal Academy, is exactly of the same tuning. Instead of prosaic description of architectural drawings, something in the Comical, or the Statistical, or the Inexplicable Styles should be added to attract the modern intellect. Instead of naming one of their works, "A Drawing Room in the Mediæval Style," architects might dignify it with such a motto as,

> "Cracked bargains from brokers,
> Cheap keepsakes from friends."

Or, to some monument of more than sepulchral outline (designed in the taste of Her late Majesty), they might add,—

> "Tully was not so eloquent as thou,
> Thou nameless column with the buried base."

Or, to a twilight sketch of the temple of *Pallas Athene*, they might append a line of the epigram of the modern *Aristophanes*, concerning the rich attorney's elderly, ugly daughter, thus,—

> "In the dusk with the light behind her."

Indeed, there are no limits of the *bathos*, to which the poetical touch of nature doth not descend; but I have done. I warrant my remonstrance, though it may escape the ears of painters, will open the eyes of architects to a perception of their shortcomings in this wise; and future visitors to the Royal Academy will be unable to say of its Architectural Gallery that

> "Something of sadness had wrapt the place."

And I beseech you (my dear Academicians), should you doubt the aptness of my poetical quotations, to remember that all of them, and forsooth many others of a like kind and equally superfluous, are printed in the pages of your Catalogue—this current year of Grace.

THE CASTLES OF BROUGHAM AND BROUGH.

ANNE Dorset, Pembroke, and Montgomery, Baroness Clifford, Westmoreland, and Vesci, hereditary sheriff of Westmoreland, and Lady of the Honour of Skipton, in Craven, was in every way a remarkable woman: she was of high birth, held large estates, was the widow of two considerable peers, and had received and largely profited by an excellent education. To a strong and copious memory she added a sound judgment and a discerning spirit. She was a person of great firmness of character, and passed her life amidst events that exercised and strenghtened that quality. Among the many subjects upon which she was informed, and which ranged, says Dr. Donne, from "predestination to slea silk," was included a very close knowledge of the particulars of her own estates, and a very thorough determination to maintain her houses and castles in good repair. She found the castles of her Clifford and Vipont ancestors, Appleby, Brougham, and Brough, in ruins; she restored and made them habitable, and, though time and the hand of the spoiler, have again brought two of them, Brougham and Brough, to decay, their walls still exhibit much of the amending hand of the great Countess, as well as of the original work of her remote ancestors.

BROUGHAM CASTLE.

This very curious pile stands on the right bank of the river Eamont, just below the point at which it is joined from the south by the Lowther, so that the combined stream covers the fortress on the north, as do the two waters and the marshy ground between them, on the west front. The castle is placed but a few yards distant from, and but a few feet above, the Eamont, and between it and the large rectangular camp, which marks the site of the Roman "Brovacum," whence both castle and township derive their names; such, at least, seems the most probable etymology, though a claim has been set up for Burgham, which would have been more tenable had there been evidence of the place having been an English as well as a Roman stronghold.

The Roman road from Brough and Appleby towards Carlisle and Penrith skirts the north-eastern front of both camp and castle, and is carried, by a modern bridge, across the river, a few yards below the latter. Above the castle and upon the Eamont, was placed the castle mill the weir connected with which still remains. The actual site of Brovacum has been claimed for Brougham Hall, on the adjacent high ground; but, however this may be, the camp below is undoubtedly Roman, and an excellent example of the entrenchments of that people. A Roman altar was found, in 1602, at the confluence of the two rivers. What earlier name is embodied in the Roman Brovacum is not known, but "Bro" in South Wales is the old Welsh word for "the hill country," and is preserved in Brocastle, and Broviscin, in Glamorgan. The parish of Brougham is large; the church is called Ninekirks, probably a corruption of St. Ninian's kirk. The parochial chapel, which stands near Brougham Hall, is dedicated to St. Wilfrid.

The camp is contained within a single bank and exterior ditch, both very well marked, though in height and depth much reduced. Along the scarp or inner slope of the ditch are traces of a step or terrace, as for a line of palisades, in front of and below the main defence. The area within the ditch is 113 yards broad, and its length, now 134 yards, was probably 198 yards, those being the proportions of the camp at Brough. The ditch is 172 yards broad. The entrance is gone; it was no doubt in the centre of the east side, that towards the road. The angles are, as usual, slightly rounded. The castle stands a few yards north of the camp, the adjacent parts of the latter having been cut away and levelled in forming its outworks. The castle is, in plan, a very irregular four-sided figure; the south and west sides meet at less than a right angle, and are in length 80 yards and 77 yards. The north side, at right angles to the west, and upon the river, is 50 yards. The east side has been partly rebuilt, with a low salient angle. It is in length about 40 yards. This area is the main, or rather the only, court of the castle. The keep originally stood clear within the court, near to its north-east angle; a large gatehouse now occupies that angle, and much of the north front, and is connected with the keep, which, therefore, is no longer isolated. The hall and domestic buildings stand against the south wall, and are continued a short distance along the east wall. A large square tower is placed at the south-west angle, and covers a postern. The west wall is free, and seems to have been low. The castle is about 50 yards from the river, and 30 feet above it. The entrance was from the east, along the bank of the river. A ditch, wholly artificial, and probably filled with rain-water, protected the west, south, and east fronts. Towards the west it is broadest and deepest, that being the exposed front. Towards the river the natural fall and the marshy character of the ground were a sufficient defence. The entrance is, and probably always was, in the east wall, at its north or river end. This part of the *enceinte* wall is built with a shoulder or re-entering angle, so as to command, for some yards, the approach to the outer gate. The moat is now traversed by a causeway of earth, replacing the earlier drawbridge.

The *gatehouse*, rectangular in plan, and 90 ft. long by 39 ft. broad, occupies the space between the keep and the north wall, and extends either way beyond the keep. It is composed of two parts,—one, a block of chambers, lodges, &c., forms, or rather abuts upon, the curtain; the other, connecting these chambers with the keep, contains the vaulted entrance. The entrance is broken transversely into two parts, separated by a small open court. The outer passage, 34 ft. long, belongs to the outer gate, the other, 36 ft., to the inner gate. The keep forms one side and the lodges the other. Thus, there are really two gate-houses,—one abutting on the north-east, and one on the north-west, angle of the keep, each with

its own defences and gates, the buildings on the north communicating with both. The exterior portal is in the east wall. It has no flanking towers, being protected by the curtain. The north-east angle is capped by a square buttress, placed diagonally. The gateway has a plain flat segmental arch over it. Upon a stone are the words, "This made Roger," and above are two tiers each of two good decorated windows of two lights, with trefoiled heads and a quatrefoil in the head, and divided by a transom. Between the two upper windows are three bold corbels, intended to support a machicolation resembling those on each face of the keep. It is said that formerly the arms of Vaux, "checquey," were carved over the entrance; but it seems probable that they were the arms of Clifford, "chequy, a Fess," or it may have been "a Bendlet." The passage within, 11 ft. broad, is vaulted. The first defence was a portcullis, of which the square groove, 6 in. broad by 4 in. deep, remains. Within this is the rebate for a pair of gates, and on the right the small door of a lodge. At the inner end of the passage was a second pair of gates, opening towards the first pair, and beyond them the open court, with the keep-wall on the left. Above this outer gateway is a large room, 21 ft. east and west, by 32 ft. long. In its west wall is a fireplace, and a door opening into the middle chambers. In its north wall a good Decorated window looks upon the river; in the east wall are two windows overlooking the outer gate, and between them, over the gate, a recess for working the portcullis.

Beyond the open court is the second part of the gatehouse, which commences by a portcullis backed by a pair of doors, within which is a passage 20 ft. long by 16 ft. broad, vaulted in two bays with transverse and diagonal ribs springing from six corbels. There are no ridge ribs; the inner or further portal also had doors. The left-hand lodge is a vaulted cell, 11 ft. long by 3 ft. 3 in. broad. On the right the room is much larger, and leads to the north postern. The exterior or north front of these two gatehouses forms a handsome block, and is pierced by various openings at different levels. At its north-east corner is an angle buttress; then follows one in section a half square, set on diagonally; and west of this, again, is a large square buttress, in one side of which is the north postern, a small shoulder-headed door at the foot of a flight of stairs.

The lofty tower at the south-west angle of the court is about 35 ft. square, with an appendage on the east face. It has thick walls and mural passages, and projects but little from the curtain. It has a basement and three upper floors. The first-floor was entered by an exterior flight of stairs, which also communicated with the rampart of the west curtain. At its junction with the tower is the postern, the approach to which is guarded by a loop, while nearly over the door discharges the shoot of a garderobe.

Along the south wall are the domestic buildings, of which the chief was the chapel, about 35 ft. by 20 ft. This was on the first floor, with a timber floor and open roof. The chamber below was entered from the court by a lancet door. The chapel had a large east window, of which the jambs remain; and in its south or curtain wall are two long trefoil-headed windows, splayed within. Towards the east end are three sedilia, also with trefoiled heads and trefoils in the spandrels, the whole beneath a flat top. There is also a piscina of late Decorated aspect. Near the chapel, towards the south-east angle, the remains of a large fireplace seem to indicate the kitchen, and along the east wall are two windows, and traces of a fireplace between them, all which seem to belong to the hall. At the north end, also, on the first-floor, are remains of a handsome door, in the Perpendicular style, with a four-centred arch beneath a square head. The staircase may have been exterior. Grose shows some walls here in 1775, which are now gone.

The *keep*, called in Countess Anne's time "the Roman Tower," the only remain of the original castle, is 44 ft. square, and, in its present state, of unusual height. Its exterior plinth is confined to the north side. The two western angles are covered by pilasters, 12 ft. broad and of 6 in. projection, one on each face, meeting so as to form a solid angle. Two other pilasters, balancing these, cover the east end of the north and south walls, but there are none on the east side, that having been covered by the fore-building. The south face is prolonged eastwards 12 ft. by a wall 5 ft. thick, which rises to the third-floor level, and formed the south end of the fore-building. The pilasters rise to the present summit of the wall, and terminated originally in four square turrets, of which traces remain at the two northern angles. The keep has a basement and three upper floors, of which the uppermost, if not an addition, has been recast. The walls are 11 ft. thick at the base, and at least 10 ft. at the rampart level. The parapet is gone. There is no external set-off. In the centre of each face, and near the top, are three or four bold corbels, which evidently carried a short machicolation; and in the angles, near the top, are several cruciform loops, slightly fantailed at the top and bottom, and with lateral arms ending in oillets, much resembling those at Kenilworth. Some of these are the lower half of those of the turrets, which, with the parapet, were standing in 1775. At the upper part of the south-eastern angle the wall is corbelled out 12 in. for a breadth of 15 ft. on the southern, and rather less on the eastern, face. This is to give a little more space to a mural oratory, which has a loop on the south face, and a small trefoil-headed window towards the east, clear of the fore-building. On the north face, near the east pilaster, a vertical line of six loops shows the presence of a well-stair from the first-floor. The four lower loops have round heads; the two upper have square heads, and are probably later.

The basement is at the ground level. It has splayed loops to the north, west, and south; and in the east side is a recess with parallel sides, and a trace of the rebate of a doorway. This, if original, must have led into a cell below the fore-building, as at Rochester; but it may be a Decorated insertion. It is nearly covered up with rubbish. In the north-east angle, which has been filled up with a short wall, is a small door opening into a bent passage, which now leads into the open air, at where was the foot of the great entrance-staircase. There may always have been a cell here, but the cross-wall and the outer door are not original. In the west end of the north wall is another recess opening into a garderobe chamber, 5 ft. long by 3 ft. broad, and original. The floor has had a vaulted and ribbed roof, springing from corbels at the angles, and from four others, in the centre of each side. There was, in 1775, a central pier. As at Richmond, this vault was an insertion, replacing timber. The basement was about 13 ft. high.

The *first floor* is 23 ft. square. It has round-headed window-openings to the north and west, in round-headed recesses, with beaded angles. In the south wall was a fireplace, probably an insertion; and in the north wall, near the west end, a small door opens into what was probably a garderobe, like that below. In the north-east angle, filled up like that below by a short cross-wall, is a door opening on a well-stair, which occupies that angle, and ascends to the roof. The east wall has been in some measure rebuilt, recently. In it may be seen parts of a large decorated doorway, evidently inserted to give a direct entrance to the chamber. This floor has had an arcade against its walls, of which traces remain on the south and west sides. The arcade had slender piers and trefoiled arches. It is unusual to find so ornate a room in the first, or, indeed, any floor in a Norman keep: it must have more resembled a chapter-house than a private chamber. The chapel at Castle-Rising was so arcaded, and those at York, and that in the curtain at Richmond. This floor was about 15 ft. high, and was covered by the joists and floor of the room above.

The *second floor* has round-headed recesses, beaded at the angles, for the windows, in the north and west sides; and a flue, now laid open, occupies the south side. In the east wall is the original entrance,—a plain round-headed arch of 6-ft. opening, with a chamfered rebate for an exterior door. There was no grate. Close north of this is a small door entering an oblique passage, which opened, as at Middleham and Rochester, upon the turret over the outer entrance. The well-stair has no direct opening into this floor, whatever may have been the case before the alterations. There seems to be, as below, a garderobe in the north-west angle.

With this floor the original keep seems to have ended. There is now, however, a *third floor*, which if not altogether new, has been remodelled. The walls are very thick, and the four angles within are filled up with short walls, converting the chamber into an octagon, or rather into a square with the angles taken off. One of these fillings up, that to the north-east, is carried down the whole way. The other three are confined to the top floor, and rest upon brackets. This floor had a large recess and a window in each of the four main faces, of which that to the west is segmental and ribbed. These recesses are quite inaccessible; but it would appear, from the thickness of the wall, and from certain square apertures outside, that they communicate on the west side with mural chambers. In the north-west angle is a very remarkable fireplace of about 9 ft. opening, with a perfectly flat platband, composed of thirteen stones joggled together. This is a very fine example of this kind of work, and it stands quite unaltered. In the opposite, or south-eastern angle is a shallow-pointed recess, and in it a square-headed doorway, which opens into the oratory. The window recess in the south wall differs from the rest. Its arch was high-pointed, and moulded with deep reduplicated bands, with half-shafts with bell capitals; no doubt Decorated, but of Early English character. From the east jamb of this recess a second passage opens into the oratory, and this was probably the principal entrance to it. The oratory is seen from below to be vaulted and groined. It occupies the south-eastern angle of the building.

The east face of the keep was covered by the *fore-building*, which evidently contained a straight staircase, which rose from the north-east corner of the keep, and ascended to the main doorway on the second-floor level. This doorway is near the south end of the wall, but, notwithstanding, the steps must have begun above the ground level to reach, without undue steepness, so considerable a height. The wall has been so much injured, and so freely repaired, that the marks of the stairs are no longer visible, but a toothing and some springing stones, as for an arch, seem to show that the staircase rose from the east angle, under a covered way or low tower, the battlements of which were evidently reached by the oblique passage still seen above in the wall. Below the level of the original doorway are traces of a larger and more lofty doorway, in the ornate Decorated style,—evidently an insertion. This would give direct passage into the first-floor of the keep, and was probably inserted when the arcading was introduced, and this converted into the main apartments. There are other toothings and roughnesses in the wall, indicating various alterations. The fore-building was about 12 ft. broad, and contained a basement and two floors, as shown by the openings in the south wall, which are, near the ground, a loop; above it, a small window, and above that a garderobe, corbelled out upon two heavy blocks upon the south wall. Above the line of roof of the fore-building is to be seen the east window of the oratory, and near it a cruciform loop.

Unfortunately for the close examination of this very curious keep, the upper part is inaccessible, and ladders of sufficient length are not readily to be procured. The architectural history of the castle may be inferred from its details, so far as these are visible. It is evident that the original fortress was a Late Norman keep, and it must have been placed within an *enceinte* pretty closely corresponding to that now seen, and which skirts the edge of the ditch. Of this supposed *enceinte*, as well as of the domestic buildings and gatehouse, which must have been present in some form or other within it, there remain no very certain traces. The keep and the ditches probably were the work of Robert de Vipont, very early in the thirteenth century.

In the Decorated period the castle underwent great alterations. The keep was raised a story, and an oratory included in the new work. The basement was vaulted, the first floor arcaded, and the fore-building so altered as to admit of an entrance on that floor. All the rest of the castle, gate-houses, domestic buildings, and the whole of the *enceinte* wall belong to one general period, and are probably the work of Roger de Clifford, the first of his race who held this property, and the husband of Isabel de Vipont, its heiress, in the reign of Edward I. Usually, when a Norman fortress was remodelled in the Edwardian period, the keep was neglected, and left in its original isolation; here, however, it was decided to turn the keep to account, and to ornament its principal chambers, and connect them with the suite of rooms in the upper floor of the gatehouse.

There are some peculiarities of detail in this castle which need further investigation. The large windows of the first and second floors of the keep are original; but the half piers and bell-caps in the exterior jambs look much later, and may be a part of the decorated additions. It is said that the buildings against the east wall received some alterations from another Roger de

Clifford, grandson to the former. It is curious that walls so thick as those of the keep, and of such good material, should have been left solid, unpierced by the chambers and passages so much affected by the Norman architects. It is also to be observed that the curtain wall is but scantily furnished with flanking defences. Countess Anne mentions "the Tower of Leaguer," and "the Pagan Tower," and "the Greystoke State Chamber," in Brougham Castle.

BROUGH CASTLE.

Brough Castle covers the whole of a steep knoll which rises 60 ft. on the left bank of the Swimdale or Helle Beck, and is about 50 yards from the water. The beck receives the Augill from the south-east, just above the castle, and their combined waters, at times of considerable volume and force, fall into the Eden about a mile and a half lower down. The castle itself is 630 ft. above the sea level, and the encircling fells of Westmoreland and Yorkshire rise to elevations of from 1,000 ft. to 2,000 ft. About five miles to the east are the sources of the Greta and the Balder, and a little further off and towards the north the head springs of the Lune, not the noble stream that gives name to Lancaster, but a tributary to the Tees.

Even in this wild and almost impenetrable country are traces of Roman civilisation. The road from Lavatræ (Bowes) to Luguvallium (Carlisle), ran through Brough, which is identified with the station Verteræ, and by Appleby and Brougham, joining at Penrith the main road, the work of the same people, from the south. Five and seven miles to the east of Brough are two Roman camps, and there are others upon the same line of road at Redlands and Kirkby-Thore, and a very perfect one at Brougham. The Roman road at Brough runs generally east and west, and crosses the Beck at Market-Brough, so called in distinction from Church-Brough, which lies three furlongs to the south of the river, and contains the castle. The collective parish is named "Brough-under-Stainmore." Verteræ, if identified with the existing camp and castle, stands off the main road, and south of the river, as at Brougham.

Verteræ is represented by a rectangular camp, of which the castle covers the northern and higher end, that next to the river. This camp is 157 yards north and south by 113 yards east and west, of which the platform within the ditch covers 134 yards by 90 yards. Of this area there is cut off at the northern end by a cross-ditch a plot, 90 yards east and west by 50 yards, which is occupied by the castle. This portion is further defended by some additional earthworks, perhaps Norman, to the east and west. The southern fragment of the camp seems to have been used as a sort of out-work to the castle, probably for the protection of sheep and cattle.

The castle was thus placed crosswise in the camp and parallel to the river, the action of which has carried away the outer half of its ditch, and converted the slope into a precipitous bank, at the top of which is the curtain-wall. The eastern outwork is composed of the end of the knoll or ridge on which the castle stands, and which is scarped into a triangular platform, the base of which, 57 yards long, covers the end of the fortress, and projects 38 yards. The ditch cutting off this work from the body of the place is 23 yards broad, and very deep. The earthworks westward are two banks and ditches, across the tail of the knoll, one 57 yards long, and 47 yards in advance of the main ditch, and the other 84 yards further in advance, and 94 yards long. Both are intended to cut off approaches along the river bank. The cross-ditch covering the south front of the castle is about 30 yards broad, and up it, from the east, came the main approach. These ditches, on the south east and west fronts, are wholly artificial. There is also a trace of a bank and ditch along the east front of the camp, about 30 yards in advance of the main ditch, and about 60 yards long. A road, which may be Roman, comes up from the south, and crosses the Augill by a bridge, 250 yards above or to the east of the castle, to join the main road over another bridge in Market Brough. Upon this stream is the castle mill. The defences, in masonry, seem to have been confined to the castle proper. There is no trace of such upon the out-works, which probably were stockaded. The ditches are at far too high a level to have been fed from the river; but the soil is retentive, and they seem to have been filled with rainwater.

The castle is composed of one ward, a trapezium in outline, the east, north, and west sides being at right angles, and respectively 77, 90, and 57 yards, and the south or oblique side, 94 yards. It is, in fact, a right-angled triangle, with the acute angle truncated. The keep is placed at the truncated end, and forms the south-west angle of the ward, its south and west sides being exterior, and in the line of the curtain. The domestic buildings were along the south side and about the south-east angle, and built against the curtain. Near the centre of that side was the gatehouse, and attached east of it the hall, beyond which a large three-quarter drum tower capped the south-east angle. This and the gatehouse are the only mural towers. The kitchen and chapel and some later buildings probably rested against the east wall, and there are slight foundations between the gatehouse and the keep. The north curtain, towards the river, seems to have been free from buildings. Upon it are two buttresses, and in one a garderobe, entered probably by a side door and passage in the wall. This curtain is 3 ft. to 5 ft. thick, and from 12 ft. to 15 ft. high inside.

The *gatehouse* is placed near the centre of the south side of the castle. It was an oblong building, and formed the west end of a block of which the hall and withdrawing-rooms formed the eastern part and remainder. It was composed of a passage between two walls, of which one remains, and is 6 ft. 6 in. thick and 45 ft. long; the outer 10 ft. being outside the curtain. The portal is gone, but the springing-stone remains of the inner doorway, 3 ft. 7 in. broad, and recessed 8 ft. 6 in. within the inner front. The vault of the passage, about 10 ft. long, rested upon three bold ribs, of which the springing-stones remain, and beyond which was the outer gate, of which a part only remains. There was an upper floor, and if the rubbish were cleared away the plan of the gatehouse would be visible. The walls seem Norman, but the ribs, vault, and fittings are probably insertions of the Decorated age.

The *hall* was poor. It was on the first-floor level, and had a floor above it, and, therefore, a flat ceiling. The basement is composed of three vaults placed transversely, with flat, slightly-pointed arches. The doors are towards the court, and one chamber has a small Tudor fireplace, in a corner. Each had a loop in the outer end, and in the ends of two are mural garderobes in the substance of the curtain. The hall was not above 12 ft. or 14 ft. high. In its north side is a round-arched recess, probably the original entrance, by an outer stair; and near it a fireplace. In the south or curtain side are two good late Decorated windows of two lights, rather flamboyant in tone, with plain exterior drips. Above these is a step or ledge for the floor of the upper room, and two windows not directly over those of the hall.

There is no very decided evidence of a chapel. The kitchen, probably, was near the north-east end of the hall, and against the east curtain. The withdrawing-rooms were at the east end of the hall, and extended into *Clifford's Tower*, a fine bold drum of 30 ft. diameter, which caps the south-east angle of the ward. This tower seems to be of Decorated date; and the base and part of the wall original; but it has been almost rebuilt, probably with the old cut stones, in the Tudor period, to which belong its numerous square-headed windows. Part of it was taken down in 1763.

The keep stands upon rather the highest part of the enclosure. It is rectangular, 43 ft. east, and west, by 51 ft. north and south, and stands upon the curtain, with which its west and south faces are continuous. As it does not quite cover the whole end of the ward, this is closed by a low curtain, 17 ft. long and 3 ft. thick, which extends from the keep to the north-west angle of the ward. The keep is composed of a basement and three floors, and is about 60 ft. high. The parapet is gone. It has a plinth only on the two exterior faces, where the ground is low, and there are two sets-off which indicate the level of the second and upper floors. At the end of each face is a pilaster, 7 ft. broad and of 6 in. projection, and those adjacent meet and form a solid angle. These pilasters rose clear of the wall to form angle turrets, of which parts remain. From the upper set-off, on the north and south faces, rises an intermediate pilaster, 3 ft. broad. The walls at the base are 10 ft. thick, and, at the top, 6 ft. The basement is at present nearly filled up with earth and rubbish, and much of the east side, and part of the south-east angle, fell in in 1792, and obscures the details of the main entrance.

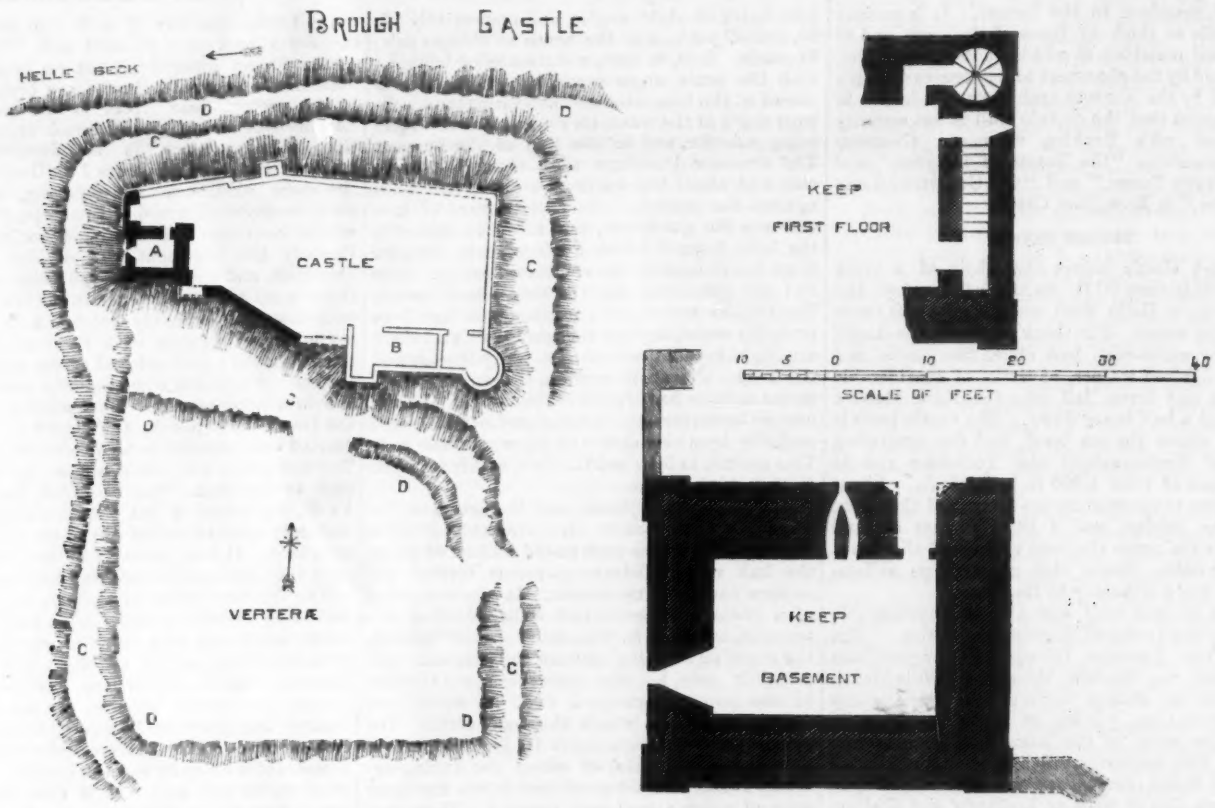
The *basement* is at present entered by a plain round-headed doorway of 4 ft. 7 in. opening, in the north wall near its east end. This has a rebate for an inner door, but no groove for a portcullis. The outer jambs are broken away. It is pretty clear from a comparison of its ring-stones with the original arches above, that this entrance is an insertion, probably of the time of James I. or Charles I. In the same side, near the doorway, is a very peculiar air-hole formed of two loops, 2 ft. apart, which converge to a single exterior loop. Possibly the basement was divided into two chambers, and one loop opened from each; but there is no trace of any partition. In the west wall there was probably another loop now converted into a window of 2 ft. opening, square-topped, set in a bold splayed recess, evidently an insertion of a period when security was no longer the first consideration. The window opens in the line of the plinth, the set-off of which is carried over its head as a square hood-moulding. The south wall was blank, and so, probably, was that to the east. The basement was 13 ft. or 14 ft. high, with a flat timber ceiling. There certainly were no mural chambers and no staircase in it. It was probably entered from above by a trap-door and ladder, and used as a store.

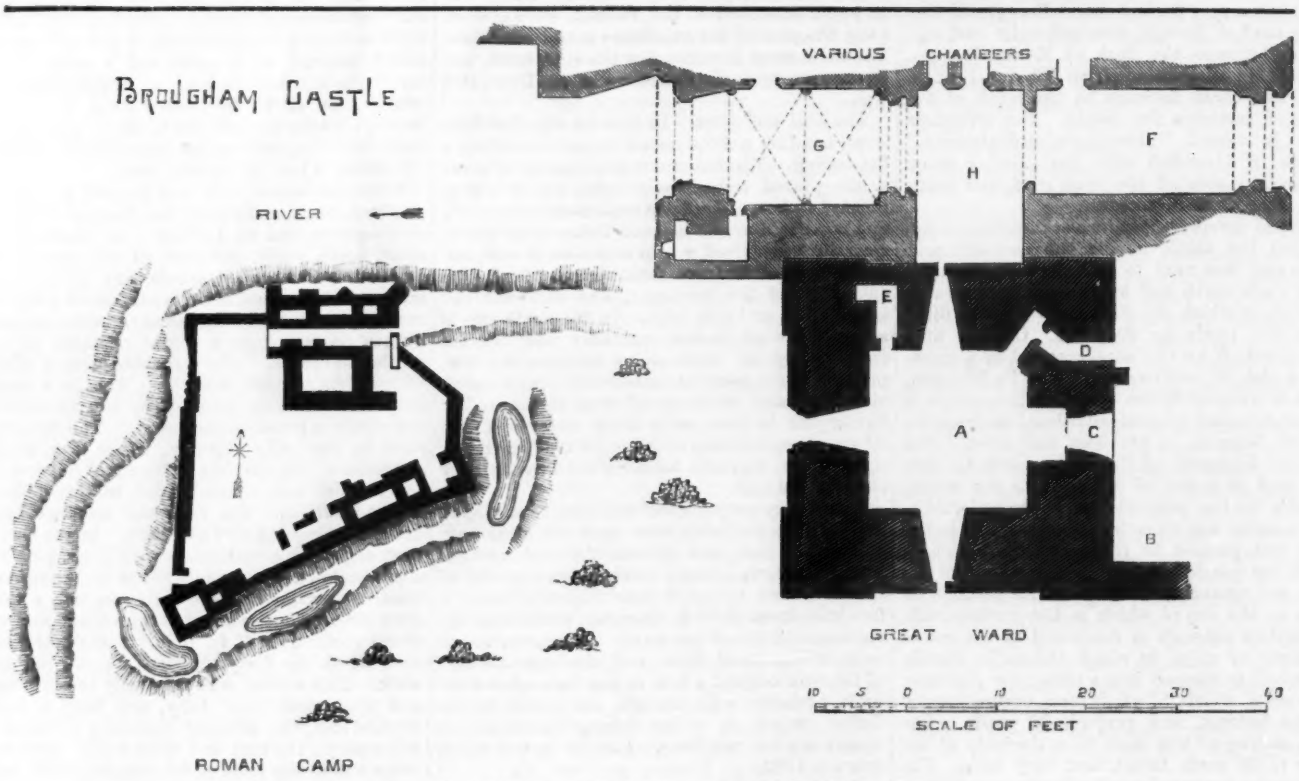
The *first floor*, about 13 ft. high, seems to have had loops in plain round-headed recesses in the north, south, and west sides, of which the latter is broken away, and a two-light Tudor window inserted. The northern loop has also been replaced by a similar window. In the south wall the loop is represented by a small square opening. In the ruins of the east side may be traced the remains of a doorway and the base of a lobby and staircase in the wall. It is clear that the external door was in this face, near the south end, and that it opened direct into the first floor, while right and left in the thickness of the wall, was a mural passage, at it south end a mere lobby, but to the north containing a straight staircase which rises 13 ft. by twelve steps, 4 ft. 4 in. broad, towards the east angle, where was a small lobby which opened on the second floor, and was lighted by a loop in the east wall.

Thus, the *second floor* was entered in its east side by a direct mural stair, like those at Carlisle, at Chepstow, and at Ludlow. In each of the sides, north, south, and west, of this floor is an original round-headed recess, and in the east wall, over the mural stair, are traces of a shorter recess, placed higher up, whence seems to have been a passage into a mural chamber in the south-east angle. The southern recess alone contains its original window. This is a small coupled window of two lights, square-headed, but within a round-headed arch. The dividing shaft is decidedly Norman, as is the whole character of the opening. The north window is also coupled and round-headed, but looks like a Stuart insertion. The east and west windows are square-headed, of Tudor date. In the north-west angle is a mural recess with loops, possibly a garderobe, and in the north-east angle a square-headed doorway opens by a lobby into a well-stair, which commences at this level and ascends to the roof. It is 7 ft. 6 in. in diameter, and rises 31 ft. by forty-six steps to the rampart walk. This second was originally the principal and uppermost floor, lofty, and with a high-pitched roof, the weather moulding of which is still seen on the east and west walls. The roof ridge was at the level of the rampart walk, and, as the north and south walls seem original, there must have been a deep cavity on either side, with the gutter in its bottom. Subsequently this roof was removed and replaced by a flat roof, at the rampart level, the line of which is marked by a row of corbels in the north and south walls. The cause of this change, common probably to all Norman keeps, was the superior convenience of a flat roof, rendered possible by the introduction of sheet lead as a roofing material.

The *third floor* was formed by dividing the height thus gained by a floor laid at the level of the springing of the old roof, and thus was created a second floor of 10 ft., and a third of 20 ft. In the west wall was opened a square-headed window, in a splayed recess, and close south of it is a small Tudor fireplace, the flue of which ascends into the south-west turret. The east wall is less perfect, but still shows the line of the old roof and the jamb of a Tudor window. In the north-east angle is the door from the well-stair.

The floors of the walls were throughout of timber, the joists of the first and second resting in holes in the north and south walls of the turrets; that at the south-west is probably modern. It contains the flues of several fireplaces, which appear to have been inserted in the south wall,





Plan of Keep, and Entrance-passage of Gatehouse.

BROUGH CASTLE.

A. Keep. B. Hall. C. Ditches. D. Banks.

BROUGHAM CASTLE.

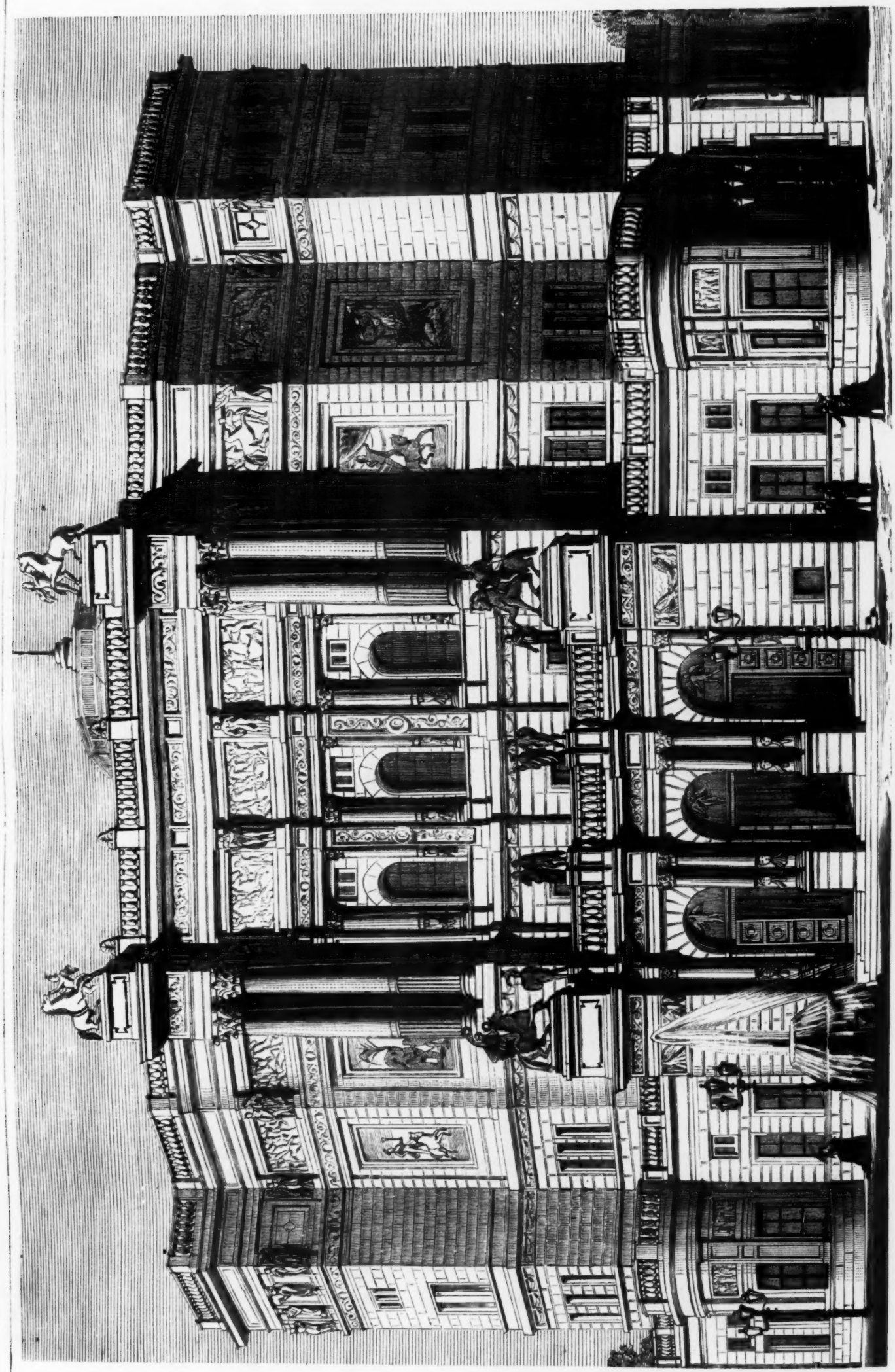
A. Keep. B. Site of fore-building. C. Later doorway. D. Later opening.
E. Garderobe. F. Outer gatehouse. G. Inner gate-house. H. Open court.

but which have fallen out. The keep probably had originally no fireplaces. The north-east turret contains the head of the well-stair. The other two turrets seem to have been mere shells, having only the two outer walls. They all rose about 12 ft. above the rampart walk, and 5 ft. or 6 ft. above the crest of the parapet on the outside of the east and south walls of the keep. Near the top are ranges of triangular holes formed by thin tile-stones set on edge, and looking much like pigeon-holes. The row in the south wall has five holes, and in the south-east turret are three. In the east wall are two sets, one of three holes, and one, imperfect, of two. There is one hole in the north-east turret. They are evidently original and do not appear to communicate with the interior. There is no trace of a regular fore-building, for which the keep, like Goderich, was too small, but there was probably an open stair either of wood or stone ascending to the main door, which was about 12 ft. from the ground. The exterior of the keep was quite plain, and of rather rude workmanship. The pilasters are of square stones, and the wall, in part of similar material, and in part of stones of irregular shape, laid as uncoursed rubble. There is no herring-bone work, and no visible trace of Roman material worked up.

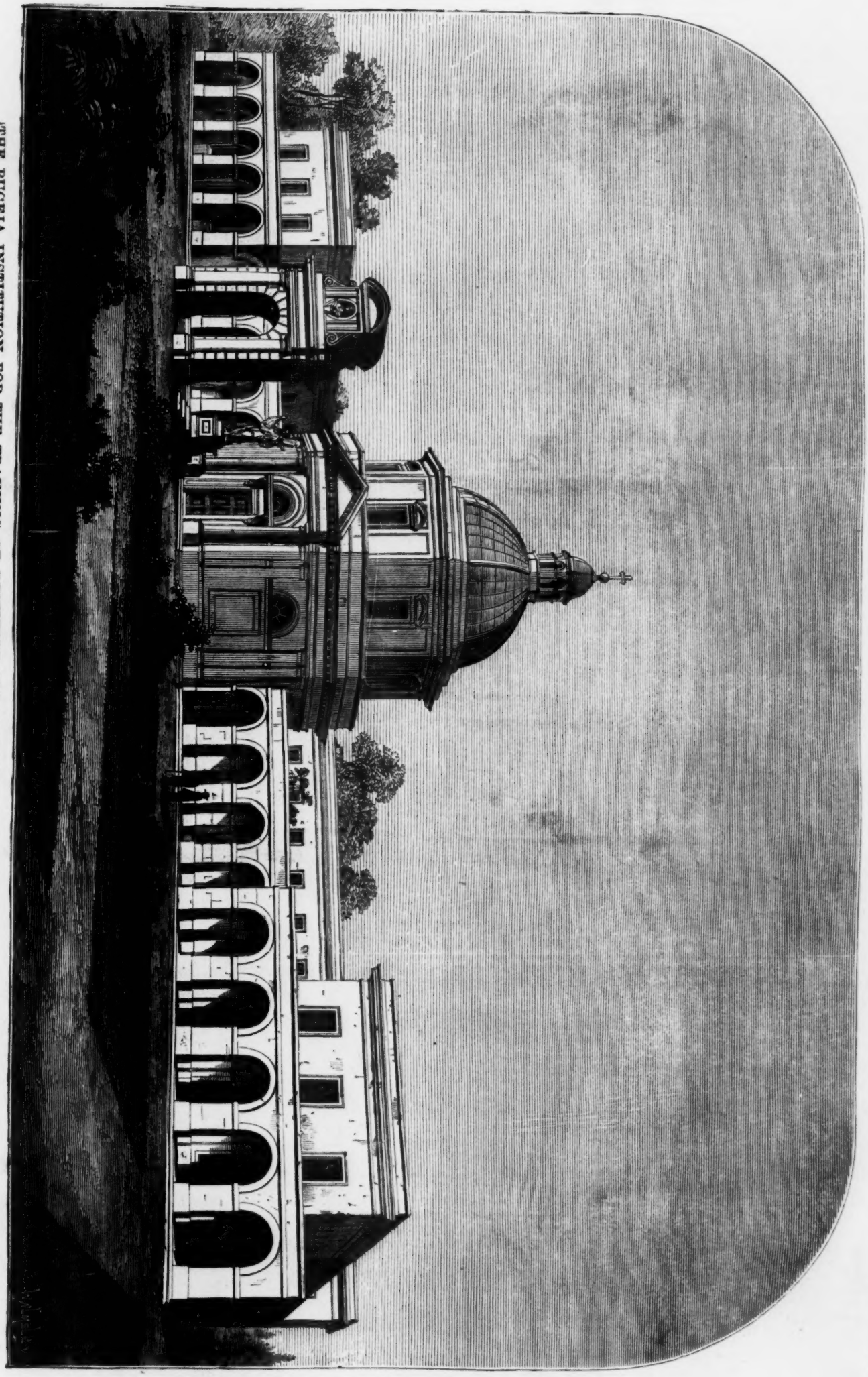
The keep is evidently late Norman, and the walls are original, though much pulled about, and with many insertions of the Tudor and Stuart days. This is another example of the high-pitched roof, as at Richmond and Bridgnorth, the whole roof having been concealed by the walls.

Probably the founder of the castle built both the keep and the curtain wall on the lines of the present curtain, and cut the cross ditch which isolates it from the rest of the Roman camp. The gatehouse and hall and the south-east tower were probably alterations and additions of the Decorated period. The whole fortress was repaired by Countess Anne, whose hand may be traced throughout the structure. The keep has been split with gunpowder, probably by order of the Parliament, producing fissures in its north and south walls.

Robert de Veteriponte or Vipont, the head of a great Westmoreland family, to which the armorial bearings of the Musgraves and Lowthers, the Blenkinsops and Hellbecks, show them to have paid early allegiance, is regarded as the founder of the castles of Brougham and Brough, at any rate in their Roman form. His imme-



RENZ'S CIRCUS, BERLIN.—HERR A. WESENBERG, ARCHITECT.



THE RUGGIA INSTITUTION FOR THE TRAINING OF DESTITUTE ORPHANS,' MALTA.—FROM THE DESIGNS OF COUNT VESPIGNANI, ARCHITECT.

diate ancestor came over with Duke William from Normandy, and the family first planted themselves in the counties of Devon, Northampton, and York. Robert, the second or third in descent, flourished in the reigns of Henry II., Richard, John, and Henry III., dying in 1228, the twelfth of the latter sovereign. He filled many posts of military trust, was custos of many castles, and sheriff of many midland and northern counties. He was also a justice itinerant, and of the Common Pleas. In 1203 (4th John) he had a grant from the king of the Bailliewick of Westmoreland and the castles of Appleby and Burg, at first during pleasure, but afterwards in fee. Possibly the grant was connected with the fact that his mother, Maud, was a member of the great Westmoreland family of Morville, and probably a daughter of Hugh de Morville, one of Becket's assassins. Robert's wife, Idonea de Buisli, was heiress of the castle and Honour of Tickhill. He was a man of very great wealth and power, and likely to have taken steps to secure his Westmoreland barony against its northern neighbours. The grant mentions the castles of Appleby and Burgh, and Burgh, that is Brough, was sacked by William of Scotland in 1174. Probably, therefore, there already existed some kind of strongholds at those places, founded it may be by the English on the Roman stations. Moreover, the year 1204 is very late indeed for keeps of so decided a Norman type, and it is no doubt possible that De Meschines or De Morville, the preceding lords of the fee, may have built both castles, but on the whole the evidence is rather in favour of Lord Robert as the founder, or at any rate the builder of the oldest parts now to be seen.

John de Vipont, son and successor, died 25 Henry III., in debt to the king, who gave his estates in ward to the Prior of Carlisle, who neglected the castles. In his time the keep of Brough was out of repair, and the joists rotten. Lord John sided with the barons, and died of wounds received at Lewes. His daughter, and finally sole heiress, Isabel, was married to Roger de Clifford,—the Roger of the inscription over the gate of Brougham,—and who was killed in battle in Anglesea by the Welsh, in the reign of Edward I. Robert de Clifford, their son, lord of the Honour of Skipton, of Appleby, Brougham, and Brough, fell at Bannockburn. There were then two parks at Brough, a mill, and the demesne land. The castle ditches let for the herbage at 6s. 8d. per annum, and the constable had 40s.

Roger, the next lord, was a great builder; he followed the fortunes and shared the fate of Thomas of Lancaster. He is thought to have made the additions to the eastern side of Brougham, where his arms and those of his wife, Maud Beauchamp, were long to be seen. His successor was his brother Robert, whose second and surviving son Roger, proved age 28th Edward III., recovered the family estates which had been forfeited, and kept his castles in repair. He died, 15th Richard II., seized of Appleby, Burgham, and Burgh. The four following Lords fell in battle: Thomas in Germany, John in France, Thomas at St. Alban's, and John at Towton. In the 4th Henry V., the Castle of Brougham lay waste, and the whole profits of the demesne were not sufficient to repair and maintain it. The next, Henry, was the Shepherd Lord, who in 1519 held a great feast at Brough, at Christmas, which was followed in 1521 by a severe fire, in which the castle was burned to the bare walls, and long remained waste. The succeeding lord and his son, both Henry, were the first and second Earls of Cumberland, of whom the latter died at Brougham Castle about 1560. George, the third earl, the admiral, who died 1605, was born at Brough in the last year of Queen Mary, 1558. With his brother Frances, the fourth earl, who entertained King James at Brougham for three days in 1617, the male line failed, and the estates and baronies came to Countess Anne, the daughter of Earl George. This lady, who repaired Brougham and Brough in 1651–2, was born at Brougham in 1589, in the same room in which her father was born, her mother died, and King James was received. Margaret, her daughter, by the Earl of Dorset, carried the estates to the Tuftons, earls of Thanet, who also inherited the hereditary shrievalty of Westmoreland, until their extinction in the present century. They dismantled Brougham and Brough, and sold the fittings in 1714. The present owner appears to be very attentive to what remains of the two castles. Both are repaired in a very substantial manner.

G. T. C.

RENZ'S CIRCUS AT BERLIN.

THE celebrated Ernst Renz, the "king of horse-riders," as he is styled, was forty years ago the nameless member of a wandering equestrian troupe. He became better known to the German public when he made Berlin the centre of his activity, where he first introduced those representations, half drama, half ballet, sometimes called pantomimes, sometimes *féeries*, &c., which gradually overshadowed the more legitimate branches of horse-riding, equestrian performances on horses saddled and bare-backed, which no longer entirely satisfy a modern public. For such representations a standing circus was necessary, and it was erected by Eduard Renz, the younger, in the Georgenstrasse, Berlin. This the latter had to vacate again in 1872, the site being required by the Berlin Metropolitan Railway. He subsequently acquired a considerable space of ground for the erection of a new circus in the Lindenstrasse. The plans for the building, the ideas of which had been supplied by the owner himself, were drawn by Herr A. Wesenberg, architect.

The front part of the ground, as far as it borders the street, is to serve for the erection of a residence for Herr Renz. The circus and the stables are to occupy the rear part of the plot, the area of which is nearly 2¼ acres. The circus is calculated to hold 4,500 spectators, room being found for that number in an amphitheatre and two galleries. There is, besides, a row of private boxes, with a number of retiring-rooms. The building also contains a stage for the orchestra; an arena, of a diameter of 43 ft.; a stage, of 5,382 square feet, which may be thrown into one with the arena; all the necessary machinery for the transformation of the stage; a spacious principal vestibule, two side entrances, pay-offices, refreshment-rooms, riding-corridor, saddling-place, harness-room, sixteen wardrobe and dressing rooms, room for dancing and gymnastic exercise, painters' room, and a few property-rooms. Outside of the circus-building proper there will be stables for 110 horses, with different connecting-passages, stables for sick horses, and conveniences for the public, the artistes, and attendants.

The whole building, with a façade rich in sculpture (the subject of our illustration) stands free. Carriage approaches are not provided; but there is a wide glass-covered passage from the front part of the building to the road.

THE BUGEJA INSTITUTION FOR DESTITUTE ORPHANS, MALTA.

DURING the recent visit of His Royal Highness the Prince of Wales to Malta the first stone of the charitable institution for the education and training of destitute orphans, founded by Mr. Vincenzo Bugeja, a wealthy inhabitant of Malta, was laid by Lady Van Straubenzee, wife of the governor. It had been supposed, in the first instance, that the Prince would have performed the ceremony, but it being a purely Roman Catholic establishment, this was not found to be convenient. Nevertheless, by the Queen's command, the Prince conferred on Chevalier Bugeja the Companionship of St. Michael and St. George.

The object of the institution, which is to be erected under the name of the Vincenzo Bugeja Conservatorio, is to feed, clothe, educate, and train to industrial occupations fifty female children deprived of their natural protectors through death, crime, or other misfortune. The site selected for the building is in a very central and healthy situation, about two miles out of Valetta, and the building is so designed as to admit of being extended hereafter to accommodate 100 inmates. Besides the entire cost of the building, the Chevalier Bugeja has provided an endowment of 1,000*l.* per annum in perpetuity. The gift will in all amount to about 40,000*l.*, the largest ever made in the island.

The plans were prepared by Count Vespignani, the architect of Pius IX., and have been adapted to the site, with improvements in the internal distribution, and sanitary arrangements, by Mr. W. Poulson, of Malta, an architect and sanitary engineer of practical ability.

The object of the founder is to give to Malta a model of an institution, as regards the education and training of children, and the arrangements for health, organisation, and discipline. In the course of the address made on the occasion of laying the first stone, the founder said,—"I am aware of the danger attending such institutions when admissions to them are made too easy, namely, that of encouraging parents to be remiss in the discharge of their duties to their children. I am also aware of the difficulties by which young women brought up in an asylum are generally surrounded, when they leave that institution. But of the two evils, the abandonment of destitute children appears to me to be the worse. The building which I contemplate to erect will afford accommodation for fifty girls. The plan, however, which I have now the honour to submit for your approval, admits of enlargement, by the mere addition of another floor. I have, as far as lay in my power, made arrangements, which I hope will be found satisfactory, for the management of the institution after my death; and I cannot refrain at this moment from expressing my heartfelt thanks to his Excellency Sir Charles van Straubenzee, the worthy governor of this island, for the permission he has given me to entrust part of that management to the heads, for the time being, of some departments of the public service, and my gratitude to that eminent English firm 'Baring, Brothers, & Co.' who, looking to the nature of the institution, have, in deviation from their usual practice, consented to accept the office of trustees of the funds destined for its maintenance. May it, with the aid of Almighty God, and under your auspices, prove equal to its object."

The block-plan of the building is in the form of the letter E, the chapel, seen in the view we give, standing forward between the two projecting wings, and being connected with the main building by arched corridors. A boundary-wall and railing enclose the whole, with a Triumphal Arch at the entrance, through the opening or gateway of which the statue of St. Vincent de Paul is seen.

THE AMRAVÂTI SCULPTURES.

INDIA MUSEUM, SOUTH KENSINGTON.

THE last ordinary meeting of the Royal Asiatic Society for the present session was held on the 3rd inst., in the India Museum, South Kensington, in order to allow of Mr. James Fergusson, F.R.S., giving an account of the Amravâti sculptures, now arranged there.

Mr. Fergusson, in commencing, said that the marvellous sculptures arranged on the walls had never previously been properly exhibited. The Amravâti tope or tumulus, to which they belonged, was in the Guntoor district, and was first discovered by Ensign Mackenzie in 1795, while travelling in the district on official duties. At that time the site of the tope was being excavated by order of the Rajah in order to provide stone and lime for building a new city and palace at that place. The sculptures which Ensign Mackenzie saw during the progress of the excavation struck him as being of extreme interest, and twenty years afterwards, when he became Surveyor-General of India, he sent a large staff to the spot, and this staff was occupied for two years in making drawings of such marbles as remained. The drawings were made in triplicate, and one set was deposited in the India Office. There were also sent over and placed in the India Museum two or three pieces of the sculpture from Amravâti. These sculptures, which were unlike anything else in the Museum, attracted Mr. Fergusson's attention, but nothing could be made of them, as no text or description of any sort accompanied them. It was difficult to tell their relative positions, or, indeed, of what structures they formed parts. They remained inexplicable until 1867, when Mr. Fergusson was asked to send some casts of Indian sculpture to the Paris Exhibition. As it happened, these particular pieces of sculpture were the only ones which Mr. Fergusson thought of sufficient interest to send casts to Paris. He expressed this opinion to one of the official attendants at the Museum, who replied, "Why, sir, if these are the things you want, we have plenty of them in the coachhouse!" On further inquiry and examination, Mr. Fergusson found that all the sculptures from Amravâti now on exhibition in the India Museum at South Kensington, had been stowed away in the coachhouse for want of room. They formed the Elliott collection. It appears that when Sir Walter Elliott was Commissioner of Guntoor he was aware of the existence of the sculptures at the Amravâti tope, and had sent them over to England, but there was no room for them in the old India Museum in Leadenhall-street, nor was there space for them in the temporary quarters of the Indian Government at the

Westminster Palace Hotel; so they remained hidden away until 1867, as already mentioned. When they were removed from the coach-house they were all photographed to the same scale, so as to afford facility for "piecing" the photographs with a view of discovering the design. After much time and trouble, Mr. Fergusson found that they could be arranged into two or three groups of sculptures of different styles, and bit by bit it dawned upon him what they were. In a plan of the tope made by Mackenzie, no central building was shown, only a circular space surrounded by two rails, inner and outer. From evidence afforded by the pieces of sculpture themselves, Mr. Fergusson came to the conclusion that one group belonged to the central building. He could never have arrived at this conclusion but for one peculiarity in Buddhist architecture, viz., that when the Buddhists wanted to ornament a building they had no means of doing so except by repeating indefinitely a miniature representation of the building itself. From the plan, and from the sculptures themselves, Mr. Fergusson gleaned that the central building was a tope about 20 ft. in perpendicular height, with a farther height of about 20 ft. to the top of the dome, and about 30 ft. in diameter. This point being determined, it was easy to see that the rest of the sculptures could be divided into two great groups, one belonging to the inner, the other to the outer rail, and by piecing them together, as shown in the diagrams, the arrangement of the building was easily understood, and the position of nearly every fragment of the sculptures ascertained with certainty. The mode in which this was done, and the reasoning on which his conclusions were based, were fully set out by Mr. Fergusson in his work on "Tree and Serpent Worship," which was the result of this examination. Passing from this branch of his subject, the lecturer proceeded to give a few figures and facts which appeared to him necessary for the understanding of what was to follow. Buddha, the founder of the Buddhist religion, was born in 623 B.C., and was a prince of a royal family north of the Ganges. At the age of twenty-seven, struck with the misery of mankind, he resolved to devote the remainder of his life to the alleviation of human misery. He died in 543 B.C., at the age of eighty, having devoted himself to preaching and teaching for fifty-three years. His body was burned, and his relics distributed to seven different cities who claimed a right to them. His religion languished for 300 years after his death,—at least, we found very slight records of it during that interval. But in 250 B.C., Asoka did for Buddhism what Constantine did for Christianity,—*i.e.*, he made it the religion of the State. From that date until about 750 A.D.,—a period of a thousand years,—it continued to flourish. During this period an immense number of topes were constructed. Tradition assigns 84,000 as having been built by Asoka alone; but however incredible that may appear, they were certainly built in vast numbers. They were never sepulchral monuments, but were erected either to receive relics or to mark the spots where Buddha had preached, or performed some miracle either in his present or some previous state of existence. The outer rail at Amravâti was about 14 ft. in height, and was ornamented with a number of discs 3 ft. in diameter, externally representing lotus flowers, internally covered with figure sculptures. There were thirty pillars in each quadrant of the rail, each with a central disc, and two half discs at top and bottom, and three discs in the intermediate rail between. At bottom there was a Zoöphorus or frieze of animals; above, externally, a procession of the figures bearing a roll, and internally a storied bas-relief, the whole extending to upwards of 600 ft. in length. The sculptures of the central building and of the outer and inner rails afforded a complete pictorial Bible, so to speak, of the Buddhist religion, and as a procession path ran round between the rails the priests and people constantly had these sculptures before them. The inner rail was later and more elaborately sculptured than the outer one. The outer rail of the Amravâti tope was built about the beginning of the fourth century, when Buddhism was in the plentitude of its power in India, and when the celebrated tooth relic, which up to that time had been enshrined at Pari, where the temple of Jugganath now stands, visited this place on its way to Ceylon, where it was shown to the Prince of Wales a short time ago. The inner rail was at least a century more modern. About the year 500 the tope seemed to have been deserted, and apparently got buried; but about the year 1,200 a part of it was re-arranged for the purpose of receiving the tooth of Buddha, which was then brought back to India. In conclusion, Mr. Fergusson expressed a hope that the site of the tope at Amravâti would be further explored, for although no doubt many of the sculptures (being of marble) had been burnt by the natives to make lime, many might yet remain. These sculptures were most interesting, not only architecturally, but on account of the insight they gave of Buddhism as it existed in the fourth century. There were no books so old as that in India, and these sculptures afforded a picture of Buddhism as it existed at that date. They showed what was unsuspected until they were discovered, viz., that there was a great deal of Tree and Serpent worship mixed up with the Buddhist religion at that period. Since the Amravâti sculptures had been discovered, Gen. Cunningham had succeeded in bringing to light a rail dating as far back as 200 B.C. This rail was as rich in sculpture as the one at Amravâti, and each bas-relief contained a title or inscription to say what it was. In the celebrated Sanchi tope the gateways were decorated with sculptures dating from the first century A.D. By comparing these different sculptures it was possible to read the history of Buddhism and of its varied changes and corruptions. It was a remarkable fact that although Buddhism was the most extensive religion in the world, and although it was still the religion of China and the surrounding countries, it had entirely disappeared from India, where there was now not a single Buddhist establishment of any sort. The inscriptions and sculptures of the time of Asoka, 250 B.C., showed that Buddhism possessed a singularly complete and pure body of doctrine at that time, which especially inculcated the duty of children to their parents, and kindness to animals. There was no figure of Buddha seen in the sculptures before the first century of the Christian era. On the outer rail of the central building at Amravâti there were numberless instances of the serpent being worshipped, and a number of trees. On the Sanchi tope, tree-worship was represented eighty times. It was believed that Tree and Serpent worship was the fetish of those races who were originally converted to Buddhism; and that, while it did not make itself apparent when Buddhism was in its strength and power, it gradually made itself felt, and as Buddhism got weak and corrupt, native superstitions cropped up and became incorporated with it, until it lost its original distinctive character. The engrafting of these superstitions was probably the cause of its fall, for it was then no longer the religion of a great and intelligent people.

A VISIT TO THE NEW VICTORIA DOCK WORKS AT EAST HAM.

THE London and St. Katharine's Dock Company are at present engaged in the construction of a very great extension of the Victoria Dock, the intended enlargement of the existing water area of the dock being upwards of 90 acres, in addition to further quay and warehouse space, having a frontage of nearly four miles in length, and covering an area of about 120 acres, the aggregate area of the enlarged dock and quay space being about 200 acres in extent. The works are now in active progress, and the following particulars, obtained by a visit made last week to the spot, may be interesting. The site upon which the new dock and quays are being constructed forms a portion of the Plaistow Marshes at East Ham, and stretches in an eastward direction from the boundary of the present dock to the north-west bank of the Thames, where the dock will be entered from the river at a point between North Woolwich and Barking Reach, and about a mile and a half below the first-named place. It is bounded on the north by Beckton and the gasworks, and on the south by North Woolwich. The entire length of the land on which the dock and quays are being formed, from the junction with the existing dock to the river bank, is upwards of two miles, situated partly in the parishes of East and West Ham and Plaistow, in the county of Essex, and partly in that portion of North Woolwich which forms a part of the county of Kent. The company obtained an Act of Parliament last year for the works in question, and there has been no delay in their commencement. A large area of land, several acres in extent, at Silvertown, and immediately adjoining the new dock site, presents a perfect village of workshops and huts, which have been erected by Messrs. Lucas & Aird, the contractors, for the purpose of carrying on the works. The excavations for the docks are being actively carried forward, upwards of 2,000 men being at work, and more than a score of locomotive engines, in addition to several excavating machines of American invention, which perform both the work of excavation and also that of conveying the excavated earthwork into the wagons drawn by the locomotives. The amount of excavation to be effected is something enormous, amounting to between 3,000,000 and 4,000,000 cubic yards, of which a large portion has already been executed, the excavated material forming an embankment on the north and south sides of the intended water area, and which will form the site for the quays, and the warehouses, and other buildings to be erected. In carrying on the excavations some interesting geological discoveries have already been made. From the surface to a depth of several feet the earthwork consists of peat, and amongst it a number of fallen trees, in an admirable state of preservation, have been found. Underneath the peat a bed of gravel has been met with, and below this gravel a stratum of concreted shells and clay has been come upon, intermingled with which stag-antlers and other animal remains have been found. The water area of the new dock will be 7,640 ft. in length, with a width at the water level of about 540 ft., covering, as already stated, upwards of 90 acres, and it will have a minimum depth of 27 ft. below Trinity high water. In addition to this area the entrance-lock from the river into the dock will be 800 ft. long and 80 ft. wide, with strong and powerful gates, which will be opened and closed by hydraulic power. The enlarged dock, when completed and joined with the present dock, will thus have two entrances, namely, the present entrance on the west side at Blackwall, and the new entrance now in course of construction at the east end near Barking Reach, there being a river frontage of three miles and a half in length between the east and west entrances respectively. Near the entrance-lock to the enlarged dock below Woolwich, the Ham Hall and Woolwich Manor-road intersects the land, which will form the lock, and this road is intended to be diverted in the direction of the river, with the construction of a swing-bridge across the lock, to be opened on vessels entering and leaving the dock. The facing of the dock walls will be of granite, several feet in thickness, and, in addition to the large quantity of stone which will be required it is estimated that not less than 30,000 tons of Portland cement will be used in the construction of the works. An important feature in the undertaking is the diversion and partial reconstruction of the North Woolwich branch of the Great Eastern Railway. This line runs immediately along the north-east side of the present Victoria Docks, intersecting a portion of the site upon which the enlarged dock is in course of construction, and in order to admit of the extended dock being connected with the existing dock, the North Woolwich line is to be diverted, and carried under the dock by a tunnel at a depth of 43 ft. below high-water mark. The entire area of the Victoria Docks and quay space, when the works now in progress are completed, will be upwards of 300 acres, with a circumference of more than five miles. It is calculated that the new works, the estimated cost of which is nearly 1,000,000*l.*, will take about three years to complete. They have been designed by Mr. A. M. Rendel, C.E., of Great George-street, Westminster, Mr. Anrose being the resident engineer.

The magnitude of these works suggests a comparison between the area and extent of the London docks, and those on the banks of the Mersey, at Liverpool and Birkenhead. The estimated water area and quay space of the London and St. Katharine's Docks are about 120 acres; the East India Import and Export Docks, 32 acres; West India Import and Export Docks, 54 acres; South Dock, 24 acres; Timber Dock, 21 acres; Commercial Docks, 150 acres; Grand Surrey Docks, 75 acres; and Victoria Dock, 90 acres (exclusive of enlargement in progress); being a total of 566 acres. The water area and quay space of the Liverpool docks are 259 acres, and that of the Birkenhead docks 166 acres, being a total of 425 acres on both sides of the Mersey, as compared with 566 acres, the present area of the docks on the Thames, exclusive of the Victoria dock extension in progress.

DINNER OF THE ARCHITECTURAL ASSOCIATION.

THE annual dinner of this Association took place on Friday, the 7th inst., at the Holborn Restaurant, Mr. J. S. Quilter, president for the past year, in the chair.

In proposing "Prosperity to the Architectural Association," the chairman said the Association was established, now a good many years ago, to supply a want felt by the younger members of the profession, who needed help, but could find no one to help them. They, therefore, determined to help themselves, and the result was seen in the fact that the Association now numbered between 700 and 800 members, many of whom would, doubtless, in due time come to be the leading men of the profession. Adverting to the internal working of the Association, Mr. Quilter observed that, although a large proportion of its members took an active part in its management, its prosperity depended upon the sustained individual interest and support of each member. With the toast was coupled the name of Mr. H. C. Boyes, the president elect.

Mr. Boyes, in responding, said he looked upon the presence of Mr. Charles Barry, the president of the Institute, as a great honour to the Association, and as an earnest that the Institute and the Association would for the future work more in unison than had hitherto been the case. With reference to the proposals made a year ago or more for the amalgamation of the two societies, he (Mr. Boyes) felt bound to express his conviction that each society would get on better, and would be best promoting its own welfare and the advantage of the profession, by maintaining a complete independence. At the same time, it would be advantageous to the Association and the profession if in every way in which it was possible the Association would accept the advice and leadership of the Institute in all matters of professional importance, while at the same time maintaining its own system of government and working. He hoped that means would be devised for closer union between the two bodies on some such basis as this.

Mr. Roger Smith said the Association that evening received the unprecedented favour of the presence of the President of the Institute. He (Mr. Smith) fully agreed with Mr. Boyes as to each society maintaining its independence. It was, indeed, absolutely necessary that there should be two societies. The Association was essentially a students' society, whose members had as their primary object the meeting together for mutual instruction. Having had some opportunities of seeing the manner in which the classes of the Association were carried on, he could bear testimony to the excellent quality of the instruction given therein. Nor was the instruction given through the medium of the Association confined to matters of construction or design; its members had opportunities of learning the conduct of business, and of preparing themselves to meet the larger outside world. On the other hand, the Institute had to maintain the dignity of the profession, and in all matters pertaining thereto the Association would do well to follow its lead. He felt quite sure that when the Institute did anything the value of which could be perceived by the Association—and the Institute had done a great deal for the Association and for the junior members of the profession generally — the Association was generally sufficiently appreciative. The Institute had, however, done some things for the junior members of the profession which had not been so fully appreciated as could have been wished. For instance, the Institute established the Voluntary Architectural Examination; but he appealed to the members of the Association to say whether it had been adequately responded to. He was quite sure that in the hands of Mr. Barry the conduct of the Institute would continue to be favourable to the objects of the Association. Mr. Barry not only inherited a great name, but had himself produced works of no mean order. The pleasure with which his election as president of the Institute was received was unalloyed, and his presence at the dinner of the Association was a valuable augury as to the future. He (Mr. Smith) was not one of those who thought the time would come when both societies would amalgamate, but he did look forward to a time when they would be in closer union, and co-operate more together. He begged to propose "The Health of Mr. Barry."

Mr. Barry, who was very warmly received, said he had accepted the invitation to be present at the Association's dinner with especial pleasure. He agreed in thinking that the Association and the Institute might be of great use to each other. Indeed, he looked upon the relationship between the Institute and the Association as that of a father and son, and he thought the Association might look up to the Institute as a son looked up to a father, who had gone before and borne the burden and heat of the day. On the other hand, the Institute might look upon the Association as a father would upon a son, as being more energetic, more enthusiastic, and one in whom he felt exceedingly proud. The Association was undoubtedly a great success, and had fully proved its *raison d'être*. At the same time, it was necessary to give dignity and impress to the exertions of the younger members of the profession, and that function could only be discharged by the Institute. It was quite probable that some efforts now being made within the body of the Institute would result in closer relations being established between the two bodies,—he would not say "affiliation," for he did not like the term, although he had used the simile of father and son. In conclusion, Mr. Barry thanked the company for the manner in which they had received the toast.

The remaining toasts were "The Retiring President" (proposed by Mr. W. H. White in a humorous speech, and responded to by Mr. Quilter), "The Past Vice-Presidents" (proposed by Mr. Phené Spiers, and spoken to by Mr. H. C. Boyes and Mr. H. L. Florence), "The Secretaries" (proposed by Mr. J. Douglass Mathews, and acknowledged by Messrs. S. Flint Clarkson, E. G. Hayes, and Aston Webb), "The Officers, Committeemen, and Presidents of Classes" (proposed by Mr. Riddett, and responded to by Mr. Pownall, librarian), &c.

The torrent of speechmaking was agreeably diversified with songs by Messrs. Dale, Riddett, Dear, Booth, and Hazlehurst, and Mr. Hennessey gave a recitation in a very able manner. Mr. Riddett's song, "The Architectural A B C," on the model of "A was an archer who shot at a frog," afforded much amusement.

THE HEALTH OF SCHOOLS.

THE American Social Science Association have wisely taken in hand the investigation of this subject. In answer to a call issued from the Department, a public sectional meeting was held last year, at which were read completed and authorised reports from the committee of the Department upon two subjects: viz., "The Nervous System as injuriously affected by Schools," and "School Gymnastics." Brief communications, made in response to an urgent public demand for information, were also presented by the Department, concerning Defects of Sight, the Care of the Eyes, Medical Supervision of Schools, Systematic Inspection of Schools, Statistics of Sanitary State of Schools, Statistics of Rate of Growth of School Children, and School Architecture. The latter series of papers must be considered as provisory, rather than as containing the full expression of the Department's opinion. The secretary's report, explaining more fully the character of the work done, was read without debate. These papers have been printed, and are now before us.

The first session of the Department of Health was held in the Council Committee-room of the City Hall, the Rev. Charles H. Brigham, of Ann Arbor, presiding.

The writer of the paper on "The Nervous System as affected by School Life" (Dr. D. F. Lincoln) says,—"Our entire nation is believed to be suffering from certain widespread sources of nervous degeneracy. Our children are but a part of the nation, and must suffer along with the older members of the population. How shall we discriminate between what is national and what is simply scholastic? Give the child a constitution derived from excitable parents; a nutrition in infancy and childhood from which iron, lime, and the phosphates are mainly excluded; a diet in later childhood most abundant but most unwholesome, and based upon a national disregard of the true principles of cookery; a set of teeth which early fail to do their duty; a climate which, at its best, is extremely trying, killing either the aged by excessive cold, or the little children by tropical heat; an atmosphere so deprived of moisture, that the most casual observers speak of it, and men of science consider it as capable of modifying our constitutions most profoundly; add to these influences those of a moral nature, arising from the democratic constitution of our society, spurring on every man, woman, and child to indulgence in personal ambition, the desire to rise in society, to grow rich, to get office, to get everything under the heavens; add a set of social habits, as applied to the life of young girls and boys, which is utterly atrocious, which robs so many of them of their childhood at the age of ten or twelve, and converts them to simpering, self-conscious flirts and men of the world, *rusés*, and independent of control, a depraved and pitiable breed of 'little women and little men'; add finally the fact that we have now a population of six millions dwelling in cities of over one hundred thousand inhabitants, and exposed to those deteriorating influences which notoriously belong to great cities: give the child these conditions to grow up under, and can you wonder that he or she 'deviates from the type' (as it is fashionable to say) of the sturdy Anglo-Saxon pioneer who settled this continent?"

The Association is seeking in every direction information on the subject of school hygiene, and Dr. Barnard, a member of the committee, is now in London with that end in view.

ROME.

IN the rooms of the Institute of Architects, Mr. John Henry Parker has just now given three lectures on "The Ruins of Ancient Rome," the proceeds being devoted to the Roman Exploration Fund. The Fund Society is now making an effort to raise 500*l.* for the purchase of a strip of land in Rome, extending from the Aventine Mount to the Cœlian, and containing one of the short *aggeres* of Servius Tullius spoken of in the first lecture. This *agger* crosses the valley which had the Porta Capena at its east end. Mr. Parker dug ten pits on that line in 1868, and in each found the *agger* face by the wall, and with the aqueduct carried upon it, but was obliged to have the pits filled up again, because the owner would not then sell the land. The plot has now changed hands, and the present proprietor is willing to sell it. It is deemed very desirable to secure it, since it demonstrates that each of the seven hills was a separate fortified village, until Servius Tullius enclosed all within the ring-fence of his own wall.

The second lecture was on "The Forum Romanum and the Via Sacra." Mr. Parker took an imaginary walk with his audience through the Forum Romanum and the Via Sacra, showing them all the objects of interest in succession as they passed along, beginning with the building now called the Municipio, because it contains the Municipal offices, but originally called the Capitolium, and which then also contained all the public offices, the Treasury, the Record Office, and the Senate-house, or *Curia*. The upper part had been of wood, and had been burned several times; once in the time of Sylla, when the body of Clodius was burned in the Senate-house, at the east end. The fine wall of travertine was part of the reconstruction of that period, but the west end of the building has not been rebuilt, and is mentioned by Varro as one of the earliest buildings in Rome. In the Forum itself he pointed out the various objects of interest—the temples, Basilica Julia, Cloaca Maxima, screen walls of white marble, with fine sculpture of the time of Trajan and Hadrian, &c. In the Via Sacra he showed that the temple of Antoninus and Faustina has just been cleared out to the lowest level, now making visible the steps recorded by Palladio as being there, but never visible before. The magnificent monolithic columns of *cipillino* marble, 46 ft. high, can now be seen for their whole height for the first time for centuries. The last lecture was devoted to the Colosseum. The great excavations made under the area or *arena* in 1874 and 1875 have entirely changed the ideas previously entertained respecting the history of this enormous structure. Instead of being entirely the work of the Flavian Emperors, as is commonly said, it is now clear that all they really built were the magnificent stone front and double corridors round a brick theatre previously existing. He evidently uses the words "theatre" and "amphitheatre" indifferently, and contrasts the insanity of this amphitheatre, holding 80,000 people, with the great theatre of Pompeii, which held only 40,000, though built fifty years later, when the city had been so much increased. On an inscription found in the amphitheatre it is called Theatrum only. In the old tufa walls are vertical grooves for lifts to send up the wild animals in cages on to the stage or arena above, through trap-doors, and behind the outer wall, nearly under the *podium* of the lower gallery, are the dens for the

wild beasts. The scenes must have been prepared below, and sent up in the central passage to the arena above. One of the scenes was a representation of the Tarpeian rock, and culprits were thrown from the top of it down to the bottom of the gulf. The rock was 50 ft. high, and the gulf 21 ft. deep, so that the culprits were cast down 71 ft., and this scene was witnessed by 80,000 people.

THE CORNWALL CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE intended proceedings of the Congress have been sketched:—

Monday, August 14th.—Reception by the Earl of Mount Edgcumbe at Cotehele on the Tamar. Dinner at Sandoe's Royal Hotel, Bodmin, after which the company will adjourn to the Guildhall, where the Mayor and Corporation will receive the president and association, and the Earl of Mount Edgcumbe deliver the inaugural address.

August 15th.—Excursion to Tintagel, driving through Pancarrow grounds and camp; then on to Lanteglos Rectory, where the Rev. J. J. Wilkinson will receive and entertain the members at luncheon, and conduct them over the church, &c. After, Tintagel Church and Castle, Camelford, will be visited if time will permit. Evening meeting at Bodmin.

August 16th. — Excursions to Restormal Castle, Lanhydrock, Lostwithiel, and St. Neot's Church, where Mr. Loftus Brock, F.S.A., will describe the painted windows and architectural features of the church. Evening meeting at Bodmin.

August 17th.—Excursion to Launceston. A *conversazione* will be held at the Bodmin Guildhall.

August 18th.—Excursion by train to Truro, to the Royal Institute of Cornwall. Reception by the president and members, and further excursions to several places of interest in the neighbourhood. Train to Penzance.

August 19th.—Excursions. Passing several monoliths in fields adjacent to the road, arrive at Boscawen Un—Stone Circle, thence to Sennen Church, and the Land's End. Luncheon, thence to Buryan Church, Rosemoddress Circle, Boleit monoliths, and underground structures. Evening meeting at the Guildhall, Penzance.

August 21st. — To Chywoone Castle and cromlech, Bosullo hut circles. Luncheon at Chywoone. Then proceed to St. Just Church and inscribed stone, Chapel Enny, cave dwellings and barrow. Evening meeting in Penzance Guildhall.

August 22nd.—Excursion to St. Michael's Mount, where they will be received by Sir John St. Aubyn, bart., M.P.; thence to Chysanster, hut village, Bosphorthennis Beehive-hut, Lanyon cromlech. Closing meeting of the Congress at Penzance.

SOCIETY FOR IMPROVING THE CONDITION OF THE LABOURING CLASSES.

ON the 29th ult., the Earl of Shaftesbury presided at the thirty-second annual meeting of the Society for Improving the Condition of the Labouring Classes, held at Willis's Rooms. Mr. Charles Payne read the report. The details were generally satisfactory, and suffered by no comparison with previous years or the efforts of kindred agencies. The Streatham-street (Bloomsbury) house, for fifty-four families, full; the George-street (Bloomsbury) house, for 104 single men, furnishes an average of 103. The Thanksgiving Model Buildings, Portpool-lane, Gray's-inn-road, for twenty families and sixty-four single women, with a public washhouse, return full occupation and increase of washings. The renovated lodging-house, 2, Charles-street, Drury-lane, for seventy-two single men, full; the renovated dwellings for 102 families, Wild-court, Drury-lane, return full tenancy; the renovated dwellings for seventy-two families, Clark's-buildings, Broad-street, St. Giles's, return full; the renovated dwellings for eighty-seven families, and lodging-house for thirty-six single men, Tyndall's-buildings, Gray's-inn-road, show marked improvement and nearly full occupation; Great St. Andrew-street, St. Giles's, renovated houses for twelve families, full. The amount received by the Society from all sources during the year was 5,570*l.* 15s. 9d., which, with a balance in hand at the beginning of the year of 426*l.* 5s. 5½d., made a total of 5,997*l.* 1s. 2½d. The current expenses of all the Society's houses (including repairs) amounted to 3,629*l.* 16s. 9d. This, with other specified outgoings, left a cash balance of 544*l.* 3s. 2½d. The property belonging to the Society is estimated as worth 32,841*l.* 12s. 10½d., and the general liabilities amount to 22,613*l.* 15s., leaving assets to the amount of 12,227*l.* 17s. 10½d.

Thanks to the noble chairman having been voted by acclamation, on the motion of Sir Walter Stirling, seconded by the Rev. Mr. Allen, Lord Shaftesbury, in acknowledging the compliment, took occasion to animadvert on what he deemed the mistakes of recent Acts of Parliament for improving the habitations of the poor. He complained that they fostered the perverse system of single rooms, and made no suitable provision for housing those who were being improved off the selected sites. The Limehouse, Whitechapel, and Birmingham schemes were all open to these objections, while the Glasgow experiment, on the other hand, seemed to have steered clear of these rocks. The Society's practice of adapting old buildings, rather than erecting new ones, he was convinced, was a sound one, and they would adhere to it until it was proved to be otherwise.

LAYING THE FOUNDATION-STONE OF A VICARAGE HOUSE AT KENNINGTON.

THE foundation-stone of the vicarage about to be erected in connexion with the Church of St. Agnes, Kennington Park, which has been built from the designs of Mr. George Gilbert Scott, jun., was laid on Saturday afternoon last by the Rev. Canon Gregory. The vicarage will be uniform in its architectural character with the church and schools, both of which are in the Early English style, built of red brick with stone dressings, and covered in with red tiles. The site of the vicarage-house is immediately in front of the west elevation of the church, and its principal frontage overlooks Kennington Park. In addition to a basement it contains two stories, with gables in the centre of the main elevation. The formation of the building is of a somewhat peculiar character. It extends the entire width of the west-end elevation of the church, and the ground-floor portion of the structure is divided in the centre by a passage 8 ft. in width, approached under a recessed Gothic archway, leading to the principal entrance into the church. The main body of the elevation is 21 ft. in height to the eaves, the two central gables being carried to a height of 36 ft., and a high-pitched roof rises 16 ft. above the main cornice. The study, an apartment 19 ft. by 13 ft., is on the north side of the archway, on the ground floor, and the drawing-room and dining-room on the south side. The rooms on the upper floor and gables will be devoted to bedrooms and servants' apartments. The kitchens and other domestic offices are in the basement. In consequence of the unusual shape of the site there is not a square apartment in the building, the study and the other rooms on the ground floor, as well as those in the story above, being oblique and irregular in form. Mr. G. G. Scott, jun., the architect of the church and schools, is also the architect of the vicarage, and the contractors are Messrs. Hill & Higgs, who have also just undertaken the contract for the completion of the church, the works at which have been suspended during the last few months, but have this week been actively resumed, and the edifice, which has an exceptionally lofty and striking interior, is to be completed and opened on the 1st of November.

ALL SAINTS', STOKE NEWINGTON.

A NEW church, situate in Aden-grove, Stoke Newington, and dedicated in honour of All Saints, has just been completed, and was consecrated by the Bishop of London on the 1st inst. The foundations, which, from the peculiarly treacherous nature of the soil, alone cost upwards of 1,100*l.*, were built about a year and a half since.

The style of architecture adopted by the architects has the English characteristics of the thirteenth century. In plan the church consists of nave and aisles, with narthex at the west end; chancel with vestries and organ on the north side; and a south aisle intended for use as a morning chapel. The building is constructed throughout of brick, with Bath stone dressings to the doorways, windows, water-tables of buttresses, gable crosses, copings, &c.; and red Dumfries stone in the shafts of the clearstory and sedilia. The roof internally is barrel-vaulted, divided into panels, which are filled with monograms and ornamental decoration in distemper. Over the nave arcade, which is in five bays, is a range of detached columns, combining triforium and clearstory, and continued the entire length of the church, except the sanctuary at the east end.

The font, executed by Mr. R. L. Boulton, from a design by the architects, is of Painswick stone, and has been made sufficiently large to allow of immersion. The church will contain about 760 worshippers. The architects are Messrs. Francis T. Dollman and William T. Allen; and the contractors are Messrs. Hill, Higgs, & Hill.

CHELTENHAM WINTER GARDEN AND RINK COMPETITION.

IN reply to advertisements from the Winter Garden and Skating Rink Company, eight designs were sent in. After examination it was decided to award the first premium of 100*l.* to the plans with the motto, "Neits zonder arbyt," and the second of 50*l.* to those signed "Faith." The former proved to be those of Mr. Darby, of Cheltenham, and the latter those of Mr. E. L. Paraire, of Oxford-street. The skating area of the rink, as shown in the successful plan, is about 17,000 ft., or about 3,000 ft. larger than the new rink at the Crystal Palace. Mr. Darby's plans furnish only the accommodation asked for by the committee, comprising rinks, pavilion, and promenade, and winter garden, all on one floor. The building has a central dome and transept, which, with the wing on the southern side, are set apart for the winter garden and promenade, while the skating-rink occupies the lower or northern wing, which is, however, easily convertible into a promenade or meeting-room. Towards the Queen's Hotel are an entrance-drive, porch, and the necessary offices. This is the only design in which red brick is not prominent. The main work is of cream-coloured brick, with roof of iron and glass.

NEW BARRACKS, SURREY.

THE barracks at Stoughton are now approaching completion. To the left of the entrance-gate on entering the barrack inclosure stands the keep, a lofty, embattled, square structure, with towers at each of the angles. This, as well as the rest of the buildings, is constructed of red bricks, the walls being 3 ft. thick. The sills and heads of the windows are formed of artificial stone, and the red brick has been further relieved with Pether's ornamental white bricks, with nail-head mouldings. The keep has been fitted in the interior for the guard-room, &c. The top of the building has been fitted for a magazine, and here are also two tanks containing each about five thousand gallons of water, which is supplied from the Guildford Waterworks. Further to the left is a block of buildings about 190 ft. long, which will be used for offices. Still further to the left, and separated from the offices by a wide road which leads to the side gate, are buildings intended for wood stores and workshops, with a space for a coalyard. Running parallel and to the northward is a block of soldiers' dwellings, in which four rooms are allotted to twenty-eight men. Adjoining the north wall is a drill-shed, the size of which is 130 ft. by 30 ft. Ranging along the east side are blocks of buildings forming the married soldiers' quarters, &c., there being accommodation for twenty-three married soldiers and school in one block, while a second block of buildings at the back of this contains room for twelve more, and has also a laundry under the same roof. In the north-east corner is situate the hospital, with an infectious ward isolated from the main building. The officers' quarters, which stand at the opposite side of the entrance-gate to the keep, consist of buildings of a more pretentious character. Suites of rooms are arranged for eight officers and two field officers. The building, like the rest, is of red brick, relieved with artificial stone and white bricks. It has entrance porch, supported by Aberdeen marble pillars with carved Portland stone caps and bases. Several features about the internal fittings call for remark. The floors of the buildings are formed not of boarding, but of cast slabs of artificial stone, formed of Portland cement, ashes, and other ingredients. Flights of stairs have been cast in a single piece with the same material. The flights, it may be

added, are erected without any artificial support. The mess-room has a costly white marble mantle-piece, inlaid with majolica tiles of a passion-flower pattern. The works have been carried out by workmen employed by Government, under the direct supervision of Lieut. Elliot Wood, R.E., assisted by Sergeant-Major Snelling. The barracks are expected to accommodate about 300 men. The barracks will also form the head-quarters of the 2nd Surrey Militia when in training. It is worthy of notice that no fewer than four million bricks have been used in the works; these have been supplied by Mr. W. Wells, of Ryde's-hill. The Stoughton Estate, adjoining the barracks, has been purchased by various gentlemen, with a view to building. Mr. George Garnett has erected for Mr. W. Wells a large hotel, which was licensed in March last. He is at present erecting a mansion for Mr. Leake.

DISPUTE AS TO SUFFICIENCY OF BILLS OF QUANTITIES.

BULL AND SONS *v.* THE BOARD OF MANAGERS OF THE WEST LONDON SCHOOL DISTRICT.

VICE-CHANCELLOR Sir Richard Malins some short time ago decided this case, in which the plaintiffs were Messrs. Joseph Bull & Sons, of Southampton, who prayed that a contract entered into between them and the defendants, the Board of Management of the West London School District, in May, 1870, should be set aside, and that they should be entitled to receive from the Board, in lieu of the contract price, the fair value of the materials and works actually supplied and executed by them for the Board, together with interest thereon, at 5*l.* per cent. per annum from the time of the same being so supplied and executed.

It appeared that in February, 1870, the Board of Management advertised for tenders by builders for the erection of the then proposed schools at Ashford, in Middlesex. The plaintiffs answered the advertisement, and were supplied with bills of quantities for the intended works, and a form of tender. No specification had been then prepared, and the drawings from which the bills of quantities had been prepared were in the rough and in pencil. Some of these drawings, however, were seen by the plaintiffs at the office of the surveyors to the Board. In April, 1870, plaintiffs sent in a tender for the works, which was accepted by the Board, for a sum of 43,590*l.*, according to the form supplied to the plaintiffs, and based on the bills of quantities furnished to them. In May, 1870, the contract was executed for the works, and plaintiffs were put in possession of the site. They had since completed the school buildings. Early in the progress of the works they were supplied with a specification, which was then signed by their firm. Questions, however, arose, and plaintiffs alleged that they subsequently discovered, as the fact was, that the specification specified work and materials to be done and supplied greatly in excess of the work and materials included in the bills of quantities, and in many instances of a more expensive quality, and not included at all in those bills; it was on the faith of the bills of quantities alone that they had undertaken the construction of the buildings. Plaintiffs did the works according to the more costly specification, and claimed to be paid, in addition to their tender under the contract, several thousands of pounds for their extra labour. The Board had offered to pay them for any extra work, according to the contract that might be fairly due to them; but the plaintiffs' case was that they were, under the circumstances, entitled to go behind the contract, so to say, in their estimate of what was to be paid to them, and they ultimately filed the bill in this suit, praying for the relief already mentioned. The surveyors of the Board, who had been, but were not now, partners, appeared at the hearing by separate counsel; and there was a question whether they should be allowed separate sets of costs.

The Vice-Chancellor, having given the counsel for the various parties time to consider on what terms (if any) they could settle the question in dispute, ultimately made an order, by consent, that the matters should be referred to some skilled person, as arbitrator, to determine what amount should, beyond the original tender, and outside the contract, be paid by the Board of Management to the plaintiffs in respect and satisfaction of their demands in the suit. His lordship allowed the surveyors one set of costs only.

CASES UNDER THE BUILDING ACT.

RAILWAY COMPANIES' EXEMPTIONS.

AT Southwark, on the 30th of May, the London and South-Western Railway Company were summoned under the Metropolitan Building Act for having several houses in Agnes-street and Vine-street, adjoining their terminus in the Waterloo-road, in such a state as to be dangerous to the persons inhabiting them.

Mr. Napier, from the solicitor's department of the Metropolitan Board of Works, said that the houses in question were purchased by the railway company for the purpose of extending their station accommodation, for which they obtained a special Act of Parliament. The houses, however, had not been pulled down, but were inhabited by families who paid the rent to the company. Some of the houses, two stories high, were found to be from 8½ in. to 12½ in. out of the perpendicular at the rear. The railway company, through their counsel, Mr. Bullen, contended that their houses were not in a dangerous state, and, it being the private property of the company, the Metropolitan Board of Works had no right to interfere with them. He also contended that the Act of Parliament protected them from such interference. A few days ago Mr. Partridge made an order upon the railway company to take down and otherwise secure the houses, as required by the Metropolitan Board of Works. Mr. Crombie, solicitor to the company, asked for and obtained a case.

"PICKING UP TOOLS."

AT the Westminster Police-court, Messrs. Peto Brothers, of Pimlico, builders, were summoned before Mr. Woolrych, by Richard Lawless, a bricklayer, for the sum of 9d., alleged to be due in lieu of an hour's notice, for "picking up tools."

Complainant said he had been engaged in the service of the defendants, and was told at five o'clock that he would not be required any longer, and he was to fetch his money. He claimed 9d., one hour's money, for "picking up" his tools, but was not paid, and hence the summons.

Mr. Woolrych asked if it was the custom of the trade?

Complainant said it was. He had as many tools to pick up and grind as others in the building trade.

The defendants' cashier said they never paid this claim in any house in the trade. The only money paid was to joiners for grinding money, and that was two hours. Besides, they always gave notice to these men, and notice had been given to the complainant.

The foreman proved that at a little after two he gave the complainant and his mate notice that at five they would not be wanted, and all the man had to "pick up" was a pair of lines and a trowel. He was discharged because he did not do enough work.

Mr. Woolrych was of opinion that this claim was unfounded, and was not a custom of the trade. He was also of opinion that notice had been given by the foreman. The summons would be dismissed.

LABOUR AND TRADE UNIONISM IN THE UNITED STATES.

THE report of the British Consul at New York furnishes some important details respecting the condition of the labour market in the Eastern States of the Union, and also of the position of trade unionism. A comparison is made between the wages last year and those current fifteen years before. Last year there was great commercial depression, employment was difficult to obtain, labour was abundant and far in excess of the demand for it, and skilled workmen in thousands were working as labourers at labourers' pay. The quotations, therefore, are only given as nominal. The following items are of interest:—

	1860. Dol. c.	1875. Dol. c.
Foreman of blacksmiths	2 50	4 00
Blacksmiths	1 50	2 65
Foreman in foundry	3 00	5 45
Foreman of brass-founders	3 00	3 20
Brass-founders	2 50	3 00
Foreman of pattern-makers	2 50	3 75
Pattern-makers	1 75	3 00
Wood-workers	1 60	2 18
Painters	1 40	2 30
Labourers	0 95	1 25
Ordinary workmen, U.S. armoury	2 00	3 00

Domestic servants receive now from $2 50c. to $4 50c. a week, the common domestic getting about $3; cooks of skill, $4 and $5. In 1860 the rate was $1 50c. to $2, running rarely to $2 50c. The general average of advance, which must, as the Consul enforces, be taken in connexion with the difficulty of getting employment on any terms, shows wages to be 52 per cent. higher than in 1860. In cotton work the increase was 50 per cent.; in woollen, 65 per cent.; in iron and wood, 64 per cent.

Turning to the subject of trade unionism, it appears that the unions number about one-third of their total strength in 1873. The building trades societies had suffered especially in loss of members, dwindling down from 10,000 to only 3,000. Altogether the unions in 1873 number 48,180 members; this year they contain less than 18,000, of which 3,000 are out of employment. Of workmen outside of trade organisations it is estimated that out of a probable 58,000 two-fifths were idle at the beginning of the year.

LONDON SCHOOL BOARD.

FOUR new schools have been publicly opened by Sir E. H. Currie, vice-chairman of the Board, within the last few weeks. The first at Wandsworth, on the road to Tooting, which consists of two separate buildings, one for infants, the other for boys and girls, with spacious playgrounds between. The accommodation is for 607 children, and the contract price was 5,473*l.* Mr. Pritchard, of Finsbury, was the builder; and Mr. Hall, clerk of works. The next was at Bermondsey, in the Neckinger-road, the accommodation being for 872 children. The infants are placed in a one-storied building, that for the boys and girls being of three, the ground-floor forming a covered playground. The elevation is relieved with some good carving in red brick by M'Culloch. The cost of the site was 4,008*l.* 2*s.*, and of the building 8,378*l.* 10*s.* 1*d.* The builder was Mr. Jerrard, of Lewisham, Mr. Carter being the clerk of works. The third school is situated in the Knapp-road, Bromley-by-Bow, near the central gasworks, and consists of a three-storied building, standing in ample playgrounds. The ground floor has one large schoolroom and two class-rooms for infants, the first and second floors, for boys and girls respectively, having two schools and two class-rooms with double staircases and exterior covered corridors to each. The number of children is 841, and the cost as follows:—Site, 2,630*l.* 13*s.* 10*d.*; building, 7,362*l.* 14*s.* 3*d.*; or equal to a total cost of 8*l.* 15*s.* 1*d.* per head. The contractor was Mr. Nightingale, of Vauxhall, and the clerk of works Mr. Tester. The other school is placed in Regent-street, Deptford, and of this we gave particulars lately. The accommodation is for 832 children, the cost of the site being 3,810*l.* 15*s.* 9*d.*, and of the building, 7,516*l.* 9*s.* 4*d.* All of these schools are in the Queen Anne style of architecture, from the designs of the Board architect, Mr. E. R. Robson. At each of the three latter openings a musical performance was given by some of the Board teachers in the neighbourhood, under the direction of Mr. E. Sibson.

SCHOOL BOARD SCHOOLS.

Ashey (*Isle of Wight*).—The new school recently erected by Messrs. Jenkins, from the design of Mr. Francis Newman, for the School Board of the United district of Ryde, was formally opened on the 19th ult. by the Chairman of the Board (Mr. Thomas Dashwood, J.P.).

Peterhead.—The Peterhead Burgh School Board have accepted the following tenders for the work in connexion with the proposed new schools to be erected in King-street:—Carpenter work, Mr. David Fraser, Peterhead, 540*l.*; plasterer work, Mr. W. Stuart, Peterhead, 119*l.* 10*s.*; slater work, Mr. Wm. Simpson, Peterhead, 169*l.* 7*s.*; plumber work, Mr. John Ferguson, Peterhead, 110*l.* 8*s.* 4*d.*; mason work, Mr. Wm. Stuart, jun., Peterhead, 1,578*l.*; and blacksmith work, Mr. Wm. Fowler, 89*l.*

Hemel Hempstead.—At a meeting of the Hemel Hempstead School Board, on the 15th ult., Mr. Robinson (of the firm of Cave & Robinson, architects) attended the Board, and was informed that their plans for the schools for Piccot's End and Bury Mill End were accepted; and Mr. Ladds, architect, of Chapel-street, Bedford-row, London, was informed that his plan was accepted for the school at Boxmoor.

North Shields.—The new Eastern Board schools, situate in East Percy-street, North Shields, were opened by Alderman Green, the chairman of the Tynemouth School Board, on the 12th ult. The schools are divided into three departments, affording accommodation for 250 boys, 250 girls, and 280 infants,—total, 780 children, and in general arrangement of plan may be likened to the letter E, the northern arm of the letter being occupied by the girls, the southern arm by the boys, and the centre by the infants. There are two entrances,—one for boys, and the other for girls and infants. The style is Tudor, the walls being of snecked stone rubble work, with ashlar dressings. The corridors are lined with white glazed brick, and floored with cement, and the whole of the woodwork is varnished. The various rooms are heated by open fires, Boyd's hygeistic grate being used to ensure the emission and circulation of heated, fresh, and pure air. Ventilation is provided for by the use of Hill & Hey's Excelsior syphon ventilators. The contract for the whole of the works was let to Mr. Joseph Elliot, of North Shields; the internal fittings have been supplied by Messrs. Colman & Glendinning, of Norwich; and the work has been carried out from the designs and under the superintendence of the architect to the Board, Mr. F. R. N. Haswell, of North Shields, Mr. Hartman being the clerk of works. The total cost is about 20,000*l.*

Northowram.—At a meeting of the Northowram School Board on the 13th ult., the chairman moved that Mr. R. Horsfall, architect, Halifax, be engaged to prepare plans and superintend the erection of Catherine Slack school and master's house. This was seconded by Mr. Bates. Mr. Wormald moved that Mr. William Henry Haworth

be the architect, and Mr. Sunderland proposed Messrs. Jackson & Fox; but as neither of these two amendments was seconded, the original motion was carried by three to one.

Normanton.—On the 27th ult. the foundation-stones of new schools at Woodhouse, for the Normanton School Board, were laid. The buildings have been designed by and will be erected under the supervision of Mr. William Watson, of Wakefield, and consist of three separate and distinct departments. They will accommodate 500 children, and are planned to form three sides of a square. The main front is towards the high road leading from Normanton to Wakefield, on which abut the two principal entrances to the schools; on the one hand that for the girls and infants, and on the other that for the boys. The central, or infant school-room, is 54 ft. long by 26 ft. wide; the class-rooms are 26 ft. by 18 ft.; and running back are the boys' and girls' schools, 40 ft. by 20 ft. each; and classrooms, 20 ft. by 18 ft. The design is Romanesque. The school will be built with the best pressed red brick, and with Huddersfield hard-stone facings. The contract for the entire work has been taken by Mr. Henry Gibson, of Normanton, for 4,420*l.*

SCHOOL-BUILDING NEWS.

Holdenby.—A new national school was opened at Holdenby, on the 13th ult. It has been built from designs by Messrs. Carpenter, of London. It has a high-pitched roof, Gothic flat-headed windows, with tracery, two high chimneys, and a porch. The building is divided by partitions, so that part of it can be used as a class-room. It measures, without the porch, 42 ft. in length and 18 ft. in width. The roof inside is open-timbered, plastered between the rafters.

Codford St. Mary.—A new national school was opened at Codford St. Mary, near Salisbury, on the 15th ult. Accommodation is provided for about seventy children, the principal room being 22 ft. 10 in. by 17 ft., and the class-room 13 ft. by 17 ft. The material used is Westbury brick, and the roof is composed of dun-coloured Bridgwater tiles of a special pattern. The rooms are fitted with Penfold's warming and ventilating grates. Moule's earth-closet system has been introduced. The cost was between 500*l.* and 600*l.* The architect was Mr. E. H. Lingen Barker, of Hereford; and the builder, Mr. Gaisford, of Warminster.

Dean (Bedfordshire).—On the 8th ult., the new National School of this village was formally opened by Mr. J. W. Rawson-Ackroyd, who gave the site, and was the principal subscriber. The total cost, including fittings, will not be short of 580*l.* The school is of pale brick, with Bath stone dressings; the weatherings and set-offs being in brick of a deep red. The style is Tudor. The building consists of one large room, with a coved, panelled ceiling, the cornice and moulded ribs being stained of a darker colour than the panelling. This room will be divided by a rod and curtain, for school purposes, into two apartments. The architect is Mr. W. Lewis Baker, of Hargrave, Northants. The contractors were Messrs. Smith & Son, of Raunds. The ironwork of the benches and desks was supplied from the foundry of Messrs. L. Baker & Co., of Hargrave.

Gloucester. — The St. Catherine's Schools, Gloucester, were opened on the 15th ult. The building consists of a boys' and girls' room, 60 ft. by 20 ft., and an infants' room, 20 ft. by 18 ft., each approached by separate entrances, with porches; the porch of the infant school, however, has direct communication with both the rooms. They have lofty open-timbered roofs, with ample means of ventilation. The fireplaces are open, and the floors are boarded. The style and material of the schoolrooms harmonise with the church. Messrs. Medland & Son are the architects, and Mr. W. Fream, jun., the builder. As the site occupied a low position, and was liable to floods, it has been raised 4 ft. and 5 ft., the ground having been made level with the churchyard, and in parts planted with shrubs. There is ample space surrounding the schoolrooms, which will be available for playgrounds. The cost has been 1,000*l.*, exclusive of land.

Edgbaston.—At a meeting of the shareholders of the Edgbaston High School for girls, the council reported that a house in Hagley-road had been purchased for the sum of 3,500*l.*, and they had obtained possession of the premises. In order that the school might be opened at the earliest possible period the council had ventured to obtain from the architects, Messrs. Martin & Chamberlain, a plan for adapting the premises for the purposes of the school. This plan had been approved, and a specification placed in the hands of three builders.

THE SYSTEMATIC MEASUREMENT OF THE HUMAN FIGURE.

Sir,—On the 4th inst. I went to the Loan Collection at South Kensington, to hear Mr. J. Bonomi explain the measuring instrument which he has invented, and which I have taken the liberty of calling the Anthropometer. I regretted there were not more persons present on the occasion. It is astonishing how slow the English are to perceive the importance of anything new.

There is no knowing what a judicious use of this anthropometer might reveal to us by yielding a series of measurements of the human frame. Its testimony might either confirm or upset the theory of progressive development. Let me explain. I was myself measured by it, but the measurement from tip to tip of my fingers, with outstretched arms, was not exactly the same as that of my stature. I did not exhibit that squareness insisted upon by Vitruvius by several eighths of an inch. But the width, measured in the same way across the arms of the two persons who passed under the anthropometer after me, far exceeded their stature. The following questions then occurred to me:—

1. Does an exceeding length of arm indicate a closer relationship to the Simian type?

2. Does the equality between the measurement of the outstretched arms and the stature indicate a balanced intellectual and physical constitution?

3. Does shortness of arm occur in over-brained persons?

4. Do the uncivilised races exhibit great length of arm?

You will, sir, I think, allow that these are important questions for determination, and Mr. Bonomi ought not merely to register the dimensions of the persons he measures, but their trades and professions, and, when eminent, also their names.

There is another service which the anthropometer could render us. It is high time that we should determine the normal proportions of an Englishman; and should the canon of Vitruvius not be verified by that determination, it should at once be cast aside. The eminent lecturer on anatomy at the Royal Academy, Dr. John Marshall, has it in his power to utilise the anthropometer, and to add by its means another to his scientific laurels. Meter.

CONTRIBUTIONS FOR ANNUAL OUTINGS.

Sir,—Your correspondent "A. S." has done wisely in calling attention to this subject. The company I represent employs about 300 men, and contributes to the fund for the annual holiday, or "bean feast," on the distinct understanding that the manufacturers, tradesmen, and others are not solicited for subscriptions. If the latter persons were to send on to the employers any applications received from workmen, the nuisance would soon cease. J. M.

From enclosed circular, dated 22nd May, the editor of the *Builder* will see that the principal houses in the iron trade have already taken steps to check the further growth of a tax which is now demanded with confident assurance or humble solicitation, in either case most derogatory to the independence of English artisans. If employers would discourage these appeals, *employés* would soon find more agreeable and manly methods of raising funds for their annual outings. M.

FAIR MEASURE.

Sir,—Will you kindly spare a small space in your valuable columns for the suggestion measure for measure, which I think has long since been lost sight of among the many supporters of your paper? It is well known that a builder's rod is 272 ft., nor is he spared if it be any less; but too often quantities delivered are much less than their proper measure. It has been the custom of lime merchants long since to deliver lime in sacks at the works of builders, and supposed to be for their convenience, and frequently seven sacks comprise the yard. Now, should these sacks be imperial ones, and contain 3·85 of a yard, there would be no reason to doubt the lime merchant's consideration for the builder for so delivering the same; but when the sack measures 3 ft. 6 in. by 44 in. in girth, it is quite clear that there are not 27 cubic feet in seven sacks, and the so-called yard is a mere delusion; and to prevent any further delusion I beg to offer this suggestion. Suppose the sack be 48 in. in girth and 3 ft. 10½ in. in height, seven will then hold the yard; or if a box, 1 ft. 3 in. by 1 ft. 3 in. and 2 ft. 2 in. in height, be kept on the works, I see no difficulty in turning the sack's contents each time into the box, which will give one-eighth of a yard when filled, and spare the yard measure, which is frequently too bulky to find space for. It is quite certain there is no reason why 27 cubic feet should not be served to the yard, as well as 272 ft. to the rod. If this suggestion be carried out, I feel persuaded that builders will not be "sacked" any longer, but look to their yards, and have measure for measure. J. Robson.

THE SLADE PROFESSORSHIP, LONDON UNIVERSITY.

Sir,—I think you will be sorry to hear that they have elected M. Legros, a Gascon, who cannot speak English, who has deserted his own country, whose painting and drawing are eccentric, and who has never shown that he is a master of the theory of art, or that he can lecture. The Slade Professorships are now filled by two amateurs and a foreigner. Could this be in any other country? In blinking the wrong of these things, art and the country are injured.

There is an affected jargon about art being cosmopolitan. Are not all the professions cosmopolitan in the same sense? But let the council of the same college propose to elect a French Professor of Medicine, and what would be the result? To be cosmopolitan in the true sense would be to elect a foreigner if there were no Englishman fit for the post. As you know, there was, at any rate, one thoroughly fitting candidate. Shade of Slade.

SURVEYORS AND LOCAL BOARDS.

Sir,—"One of the Craft, &c.," seems much put out because Local Boards and their surveyors do the duty assigned to them. At the same time he, I think, should have refrained from heaping abuse upon his brethren who are in office, and whom he appears to accuse of "borrowing" the efforts of his brain.

Much has been said lately about the deposit of plans, and more about the deposit of elevations.

I am aware that this latter entails a little more trouble on the part of the architects (but for which they can fairly charge their clients); the submitters of drawings, however, must be treated impartially, and in many cases it is quite necessary to study the elevations, in order to see that all the requirements of the Act and bye-laws have been complied with.

Were an experienced architect (as I take "One of the Craft" to be) employed on all occasions, this, perhaps, would not be necessary; but I can assure him that very odd arrangements are sometimes presented for approval by builders, amateurs, and others, which could not be understood without elevations.

As to drawings deposited being used, I doubt if there ever really was such a robbery perpetrated. In my district the tracings (on linen or paper) are examined numbered, submitted to Board, passed (or otherwise), and filed away, to be looked at again when notice is given of the completion of the structure, when, if all is right, I give a certificate that the house, &c., is fit for habitation, and the drawings are seen no more.

I have held an appointment under the Local Government Acts for ten years, and have also been in private practice for over twenty years, but I certainly have never been asked to work for members of the Board for "next to nothing," or for anything less than the usual professional charges. It is true mine is not a "rough district," still I expect the members of my Board are a fair sample.

All Local Boards have bye-laws, which are printed, and may be had for the asking. If my friend will carefully comply with these, give the proper notices, and conform to the Public Health Act of 1875, he will have nothing to fear; and if, after having done so, he has his plans returned, he will be at liberty to proceed with the work, and no judge will decide against him.

Mem. M. E. & S. Assoc.

SALT IN SAND.

Sir,—In reply to "I. O. U.'s" inquiry in your last week's issue,—"Shake up a portion of the sand with pure distilled water in a perfectly clean stoppered bottle, and allow the sand to settle; add a few drops of pure nitric acid, and then a few drops of solution of nitrate of silver. A white precipitate indicates a tolerable amount of salt. A faint cloudiness may be disregarded."

It is only fair for me to state that I have made the foregoing extract, as some of your readers will know, from Mr. G. G. Hoskins's book, "The Clerk of Works," just published. U. O. I.

To detect salt in sand,—Taste it. Settled.

Hawick Archæological Society.—The June meeting of this society was held on the 27th ult., Mr. Robert Murray in the chair, when a paper was read by Mr. D. Watson, secretary, entitled "Notes of an Excursion to Hexham and the Roman Wall."

THE ATKINSON ART GALLERY COMPETITION, SOUTHPORT.

COMPLAINTS reach us as to this matter. Mr. William Atkinson, of Southport, having offered to the town 6,000*l.* for the erection of a Library and Art Gallery, competition was invited, and a number of designs were sent in, the expenditure being limited to the sum named. The committee selected a design by Messrs. Waddington & Son, and on inquiry found that to carry it out would cost 8,000*l.* After some endeavours to reduce the cost, Mr. Atkinson again came forward and increased his gift to that amount. The contention, of course, is that by this mode of proceeding great injustice has been done to those competitors who restricted their expenditure to the sum originally named.

The style of the selected design is described as Composite Italian. A central composition, with coupled turrets, has been inserted to relieve the severe line of the parapets required to hide the gallery skylights. The pediment will contain an allegorical group of figures, with medallion of "Inspiration" over the door. The side and back elevations are finished in brick, relieved by stone dressings. The internal treatment generally is of a plain substantial character. The general reading-room is to the left, as needing most light. As it is intended as a lecture-room, it has been designed as large as circumstances would permit, averaging 63 ft. by 24 ft. It will be lighted from two sides, the darker portion being assisted from the area. The general library (inclusive of screened passage, over which is a book platform) is 44 ft. by 25 ft. 9 in. The reference library and reading-room is 53 ft. by 24 ft. The news-room is placed next the entrance, and is 39 ft. by 24 ft., having glazed screen, in order that the attendants at the general counter may see when their services are required.

The first-floor plan of the art gallery provides main picture gallery, 67 ft. 6 in. by 26 ft. 9 in., and two other galleries, each 44 ft. 9 in. by 25 ft. 9 in. Two galleries are also provided for sculpture casts, reliefs, &c., each 21 ft. 9 in. by 18 ft. All these rooms are lighted from the roof.

CHURCH-BUILDING NEWS.

Atherstone.—The new church at Atherstone-on-Stour, near Stratford-on-Avon, has been opened by the Bishop of Worcester. The church replaces a dilapidated structure, which, although possessing some features of interest, had fallen into such decay that restoration was entirely out of the question, the area of the old structure being insufficient for the required accommodation. The new church, which is built as nearly as possible upon the site of the old one, consists of nave, chancel, with vestry on the north side, and porch, with tower and steeple over, at the south-west corner of the nave. The style is Decorated Gothic, harmonising with several features of the old church in the shape of windows and a door that have been retained and embodied in the new work. The walls are of Whimpstone stone, lined with brick and plastered internally. The dressings of the doors and windows, and the spire, tracery, and ornamental portions, are of Bath and Campden stone. The roof is open-timbered, the principals having curved ribs, and springing from moulded and carved corbels, the woodwork throughout being suitably stained. The roofs, which are plastered and coloured between the rafters, are covered with slating of a sea-green tint. The three bells from the old church have been rehung in new framework in the new tower, at a cost of about 50*l.*, by Messrs. Barwell, of Birmingham. The work has been carried out under the architect's supervision by Messrs. Collins & Cullis, of Tewkesbury, at a cost of about 1,700*l.*, Mr. Holland acting throughout as their foreman. The architect was Mr. John Cotton, Birmingham.

Tudely.—The ancient church of Tudely has been re-opened, after being closed for a twelvemonth for restoration. The interior arrangements of the church have been entirely altered, the west gallery alone being retained. A new north aisle has been added, and, as well as the rest of the church, has been filled with open seats, to replace the old and unsightly pews. Four windows have been placed in the new aisle, filled with cathedral glass. The chancel arch has been cut back, and the chancel itself raised many feet. A new east window has been added, and four small stone windows have been restored, which are shortly to be filled with glass. The restoration has been carried out under the superintendence of Mr. R. Medley Fulford, architect, Exeter.

Uplyme.—The parish church of Uplyme, which picturesquely stands upon a knoll at the entrance to the village, situated upon the borders of Devon and about a mile from Lyme Regis, having been restored, has been re-opened. The restoration has been confined to the interior. The church consists of nave, chancel, north aisle, and a chapel on the north of the chancel, known as the Ware Chapel, now used as an organ chamber. There is a porch on the south side of the nave. Formerly a gallery ran across the western end of the nave, blocking up the west window and door. This gallery has been removed, a new west window constructed, and the doorway thrown open. The gallery in the north aisle has not been removed, the accommodation not being sufficient without it. The nave has been filled with seats of pitch pine, with a flooring of tile. New choir stalls have been added in the chancel, but the old carved oak stalls remain. The screen dividing the chancel and nave has (says a local journal) been "lightened," and the stone hammer-dressed. Alterations have been made in the centre panel of the reredos, which has been "touched up." The bells—six in number—have been re-hung by Messrs. Hooker & Stokes, of Woodbury. The restoration has been carried out by Mr. Lockyer, of Uplyme, from plans prepared by Mr. Bather, architect, Shrewsbury. The cost is about 750*l.*

St. Nicholas-at-Wade (*Thanet*).—The work of restoring the parish church has been commenced. All the high pews have been removed, and are to be replaced by benches of the modern style. Some of the memorial stones in the nave, one with a brass of the Emptage family, dated 1642, are to remain. The tower of the church is 75 ft. high, and commands a fine land and sea view, and contains a fine peal of bells. The arches in the nave are of two different dates—the south Early Norman, the north Pointed, or Early English.

Books Received.

Sanitary Work in Villages and Country Districts. By GEORGE WILSON, M.D. London: Churchill. 1876.

THIS is a reprint with enlargements of a paper by Dr. Wilson, read before the Society of Medical Officers of Health at the beginning of the year. If largely circulated amongst proprietors and occupants in the country, it would do good by suggesting what they should look for and seek to improve. Some of our valued friends, the doctors, seem (by the way) to be strangely ignorant, or to desire to seem ignorant, of the length of time during which existing sanitary evils have been pointed out by ourselves and others.

A Manual of Design: compiled from the Writings and Addresses of Richard Redgrave, R.A., &c., &c. By GILBERT R. REDGRAVE. Chapman & Hall.

WHATEVER be the merits of this treatise or compilation, there can be no doubt that its title is incorrect. A manual of design, if words mean anything, implies a book teaching the art of designing; that is, of drawing, more or less, or giving examples of the leading schools of design and their chief characteristics. Designing is not talking, but drawing; but here is a book calling itself a manual of design, in which there is scarcely a stroke of drawing, only two or three stray illustrations of objects referred to. If it had been called "Thoughts on the Principles of Design," it would have been all right; as it is, the title is totally misleading.

We do not know that we have any fault, however, to find with the volume, further than professing to be what it is not. The editor tells us in the preface that it was proposed to him by the Lords of the Committee of Council on Education that a compilation from his father's numerous addresses on Art at South Kensington, chiefly on the occasion of presenting prizes and medals to the students, should form one of the South Kensington Handbooks; and no one will quarrel either with their lordships for wishing to put in a permanent form the criticism and advice of a thoughtful and cultivated man in regard to the matters specially entrusted to his oversight, or with Mr. Gilbert Redgrave for the interest and satisfaction which he must naturally have felt in undertaking such a task on such recommendation. The book takes the form of chapters or lectures, as they might be termed, on principles of ornamental art, grouped under three heads: Six chapters on "The Principles of Ornament"; five on the application of these principles to manufactures; and two on "The Teaching of Ornament, and the education of the Designer." Of the opinions and principles laid down it may be said that they are nearly unimpeachable; it cannot be denied, however, that a great deal of this correct principle has been repeated and repeated, sometimes in nearly the same words, till it tends to become mere common-place. At the same time we must consider Mr. Redgrave's remarks in connexion with the date and the place at which they were spoken, when some things which now appear hackneyed may have seemed less so; and they are certainly more true in taste, better expressed, and far less pretentious, than some utterances which have come from the regions of South Kensington. Among remarks which are more out of the beaten track, we notice some observations in the first chapter on the pervading love and desire for ornament among the French lower and middle classes as by no means necessarily evincing the prevalence of a true taste; as proceeding rather from a desire to have in their own homes, if possible, something of the glitter and brilliancy of the places of public amusement, which in turn have taken their cue from, and try to vie with, the style of the palaces and other national buildings of Paris. The flat system of dwelling-houses, too, renders possible a greater degree of decorative treatment without proportionate expense to the tenant than is the case with us. But the art employed for this purpose is gaudy and brilliant rather than tasteful and homelike. It is the national taste, but a taste may be national without being pure or good. The chapter on "the source of style" contains a good deal that is suggestive; and in referring to Japanese art we are glad to see Mr. Redgrave had the courage (for it almost requires courage at present) to say that the absence of symmetry in this art, however piquant and interesting at first and as a novelty, is felt in the end to be an error in principle. In the following chapter, on "Elements of Style arising out of construction," the degree in which the faults of bad styles arise out of false construction is duly brought out; and the short chapter on "Fitness of Ornament to the Material to which it is applied" includes enough of important truth to make in itself a radical change in a large proportion of our ornamantal manufacture, were the principles laid down here understood and carried out by the designers and manufacturers of decorative articles or materials.

In the chapter on the decoration of buildings, which comes under the second general division, we are fully in sympathy with what is said as to what Mr. Redgrave called "the *appliqué* work of the plasterer and decorator," part of the remarks on which we may quote as a specimen of the tone and style of the book:—

"A cornice so many inches in depth is found to be needed, and from a well-filled storehouse of such works in every style the plasterer, disregarding every other consideration, seeks the pattern which most readily complies with the necessary conditions of depth and projection. A centre flower for the ceiling, so many feet in diameter, is the next requisite, and, the labours of the plasterer at an end, the decorator and the upholsterer step in, and the former touches up his work with colour, applied with no regard to relative fitness and appropriate gradation, while the upholsterer sends in the hangings and furniture suited to another country and another age. Scale seems to have been quite disregarded in the work of the plasterer, since the fruit and flowers, the birds and game of one part, are different in size from those of another part. The style, again, is mixed, one part being two centuries earlier than the other. There is, besides, far more pains taken with the exact rendering of fur or a feather, than in perfecting the form of a moulding, or the shape of a panel. The architecture has, in the designer's mind, been subordinate to the ornament, and an ill-formed ellipse, or a coarse and unrefined moulding, appears of less importance to him than the mere imitation of the feathers of his birds or the fur of the animals of which his ornament consists. Carry this treatment a little further, and it will result in having the game, the fruit, the foliage, and the flowers not only modelled to the exactest imitation, but the skill of the painter called in to add to its naturalism, and the whole painted with the colours of nature: thus decoration will be thought perfect only when it competes with that strange group in relief we sometimes find framed to form a picture."

The remarks on the right principles of stained glass, in the same chapter, embody in a clear form what we have repeatedly urged here as to the necessity for a flat and conventionalised treatment, and the undesirability of a pictorial style in this art; and we call attention to some comments (p. 127) on the preference given, in much modern silver work, to mere glitter and finish

of the material rather than artistic design, "objects being loaded with toolings and burnishings, and matted and frosted, and every other expedient attempted, to show the silver rather than exhibit the art." This, undoubtedly, is true, and is what gives a great deal of vulgarity of manner and style to silversmith's work; but, on the other hand, it must not be forgotten that design carried out in any specially costly and beautiful material ought to exhibit its special beauties as a material, although not so prominently as to put the artistic interest in the background.

The two concluding chapters on education are thoroughly sound in principle, and contain some speciality in the way of putting things, and in the main we may see that for good taste and true critical sense this compilation from Mr. Redgrave's addresses is quite irreproachable as far as it goes.

VARIORUM.

THE current number of the *Popular Science Review* includes an interesting and valuable article on "Aquaria: their Present, Past, and Future," by Mr. W. A. Lloyd, of the Crystal Palace Aquarium. The writer says in conclusion:—"There are few things more trying to that great virtue,—patience,—than a large public aquarium, especially in its preparation, before it is ready for the reception of animals. It is to this lack of patience on the part of the directors of the Royal Westminster Aquarium, and to their absolute refusal to allow me to have proper engineering assistance during its construction, and to general mismanagement, that its present confused state, and its unsatisfactory condition in every way, is due. On this account I resigned my post of adviser to the society, as I found it useless to advise when advice was recklessly disregarded. Aquarium work, being hydraulic engineering on a small scale, is essentially the work of an engineer, and not that of an architect, unless he is also an engineer and a mathematician. There is for aquaria a great and important future, both as regards their influence on science, and as pecuniary speculations, if indeed, as I much doubt, there can be any real severing of these two interests. Success, however, must always be the result of a careful study and representation of what nature does, and of a strict avoidance of the recent heresies to which I have in this communication adverted."——"Old and New London" is getting on fast to an end. Here is a sentence from the current number as to *Hyde Park*:—"In remote ages the tract of land now enclosed as Hyde Park was bounded on the north by the Via Trinobantina,—one of the great military roads,—now identified with Oxford-street and the Uxbridge-road. On the east ran another Roman way, the old Watling-street which crossed the other at Tyburn, and sloped off to the south-east, in the direction of Park-lane. On the west and south its limits were not equally well defined. Under the Saxon kings, it would appear that the Manor of Eia, of which it formed a part, belonged to the Master of the Horse; and Mr. Larwood most appropriately observes, 'Could the shade of that old Saxon revisit the land which he held when in the flesh, no doubt he would be satisfied, for nowhere in the world could he now find finer horses and better riders than those we daily see in Rotten-row.'"——Looking through the current No. of Cassell's "Technical Educator" (amongst a pile of other useful serials from that firm), we find a reminder as to the Menai Suspension Bridge:—"The most stupendous undertaking in which Telford was engaged, and perhaps the most imperishable monument of engineering fame, is the Menai Suspension Bridge over the Menai Strait, one of the most magnificent works in the world. It was full time that some such means of crossing the strait were constructed, as between the years 1664 and 1842, no less than 180 persons had been drowned at the Ferry of Moel-y-don. So early as 1810 more than one design for a bridge had been designed, and rejected as impracticable; and it was not until the completion of the great Holyhead road by Telford that he saw the absolute necessity of devising some safe means of crossing. He selected a spot called Ynys-y-moch, where the bold and rocky shores on each side gave opportunities for a lofty roadway, which was carried 100 ft. above high-water mark, so as to allow vessels of the largest size to pass underneath. It is difficult for the eye to estimate the colossal proportions of this wonderful bridge in the air, and it is only after attentively observing the vehicles and human figures crossing it, and looking in the distance through the high trellis-work of iron like flies in the web of a spider, or sparrows fluttering in a net, that it is fully appreciated. A sensible vibration is produced by the passage of a vehicle, or even a man and horse; but it has withstood the greatest storms of wind almost without injury. The weight which the chains support is calculated at 489 tons, and that which they are capable of supporting at 2,016 tons, leaving the available power of 1,520 tons to resist the unusual strain. The total cost of its construction was 120,000*l*. The masonry is of hard limestone from Penmaen, in Anglesea."

Miscellanea.

Importance of Architects.—There is a story on record of an architect repudiating any connexion with the building fraternity, in the case of the late eminent Mr. Alexander, architect of Rochester Bridge and other fine buildings in Kent. He was under cross-examination in a special jury cause at Maidstone, by Sergeant—afterwards Baron—Garrow, who wished to detract from the weight of his testimony, and after asking him what was his name, proceeded:—"You are a builder, I believe?"—"No, sir, I am not a builder. I am an architect."—"They are much the same, I suppose?"—"I beg your pardon, sir, I cannot admit that; I consider them to be totally different."—"Oh, indeed; perhaps you will state where this great difference consists."—"An architect, sir, prepares the plans, conceives the design, draws out the specifications—in short, supplies the mind; the builder is merely the bricklayer or the carpenter—the builder, in fact, is the machine; the architect the power that puts the machine together, and sets it going."—"Oh, very well, Mr. Architect, that will do. And now, after your very ingenious distinction without a difference, perhaps you can inform the Court who was the architect of the Tower of Babel?" And now mark the reply, which for promptness and wit is not to be rivalled in the whole history of rejoinder:—"There was no architect, sir,—and hence the confusion!"—*Extract from a Letter by the Rev. J. Jessopp.*

A Legal Refinement.—According to the decision of Mr. T. K. Kingdon, the judge of the Bristol Tolzey Court, machinery used in wood-working is not mill-gearing within the meaning of the Factory Acts. The case of Wilson *v.* Brown was brought under the Factory Acts of 1844 and 1856. The plaintiff, Edwin Eland Wilson, brought the action by his next friend, Charles Henry Wilson (he being legally an infant), against Archibald Douglas Brown. The defendant carried on the business of a cabinet-maker, in Bread-street, Bristol, having about sixty persons in his employ, and the plaintiff was apprenticed to him. The action was brought to recover damages in consequence of an accident which occurred June 16, 1875, whereby the plaintiff's arm was so injured that it had to be amputated. Damages were laid at 200*l*., but it was agreed between the parties that in case a verdict was given for the plaintiff, the amount of damage should be 100*l*. For the defendant it was submitted that the plaintiff was not entitled to recover in the action, inasmuch as the machinery was not, in any sense of the term, mill-gearing within the meaning of the Act. The judge thought this contention was right: that the machinery in question was not mill-gearing within the meaning of the section; and that, if it were mill-gearing, there could be no exemption, and that it must be fenced. The plaintiff was accordingly nonsuited.

The Devonshire Baths, Eastbourne.—The directors of these baths, with a view to giving even better accommodation to the public, have recently carried out extensive alterations and enlargements. The most important alteration consists of the work done at the swimming-baths. The gentlemen's bath, which, as first constructed, was of a total length of 60 ft., and a width of 30 ft., has been increased in length to 155 ft. The ladies' bath has been increased from 57 ft. to 120 ft., with a width of 24 ft., these lengths being not from wall to wall, but the surface of the water, and to each are added two shower-baths of fresh water, a life-buoy, and other apparatus necessary for saving life. The whole of the works have been carried out by Messrs. Wallis & Co., Mr. G. A. Wallis being the engineer in charge.

Curious Wages Case.—On the 24th ult., at the County Petty Sessions, Warwick, Samuel Borton, labourer, of the Commercial Buildings, sued Mr. G. F. Smith, builder and contractor, Milverton, for 1*l*. 8*s*. 9*d*., wages due. Mr. R. C. Heath defended. The defendant is the contractor for the Haseley Waterworks under the Town Council, and the complainant was working for him up to the 17th ult., when he went to receive his money along with the other men. The wages are paid through a small window, and the workmen are all called up, not by their names, but by numbers. The complainant's number was "12," and his statement was to the effect that he heard 11 called up, and 13, but that 12 was missed. After all the men had been paid he went to the window and stated that he had not received his wages, but defendant referred to the pay-sheet, and finding that 12 was crossed off he refused to pay again, on the ground that complainant ought to have presented himself at the window so that it could have been found out who had his money. Defendant affirmed that the money was paid, and said that the number 12 was called out. The Bench dismissed the case.

The Warwick Military Depot.—The new barracks and other buildings which are to form the new Military Depôt at Warwick are nearing completion. They are situated in the parish of Budbrooke, about two miles from Warwick. The site was purchased from Lord Dormer by the Government, and on the 3rd of August, 1874, the works were commenced by Messrs. J. & T. Davis, of Banbury, whose contract amounted to above 40,000*l*. The various buildings have been erected on the four sides of an open space of ground, which will form the parade when laid out. Already the soldiers' quarters, the canteen, drill-shed, married soldiers' quarters, hospital, infection ward, officers' quarters, quartermaster's quarters, and the guard-room have been put up, and the armoury is up to the first-floor level. The structures are all of red brick, with bands of blue brick, and dressings of stone. The only attempt at ornamentation is in the officers' quarters, the material of which is the same as that used in the other edifices. The barracks will accommodate about 300 men, and it is expected that they will be so far finished as to admit of their being occupied by the end of next month.

"An Unhealthy Area."—According to the *Staffordshire Advertiser*, there is "ample scope and verge enough" for the application of the Artisans' Dwellings Act to Netherton. That that is "an unhealthy area" of the borough of Dudley, inspectors, Government and local, abundantly testify. The Local Government Board have called upon the town council, as the sanitary authority, to remove the dwellings *en masse* as unfit for human habitation. The local inspectors say it is impossible to purify them, medical men testify that good health cannot be enjoyed in such bad places, and the ministers of morality and religion declare that mental and moral degradation must needs go hand-in-hand with such material ruin. But the soil is rich in coal and ironstone, and the Earl of Dudley, the owner, has informed the town council that he does not feel called upon to surrender the right to work the mines. As building new dwellings while the mines are reserved appears to be out of the question, the town council have sought the advice of the Local Government Board.

Sewage Experiments at Aston.—Mr. D. A. Wilks has patented a method of treating sewage by which he proposes to filter a disinfectant composition, which turns the solid fæces into a manure, and decomposes the liquid matter for after-treatment. This manure is stated to be of considerable commercial value to farmers. On the 25th ult. Mr. Bloor, chairman of the Aston Local Board, spent several hours in investigating the chemical and mechanical arrangements of the system. The experiments which Mr. Wilks has conducted are said, from a sanitary and chemical point of view, to promise good results, but the *Birmingham Gazette* would like to see them fairly tested in the presence of impartial authorities on the subject.

The Drainage of Hawick.—The Hawick Town Council have received a report from Messrs. J. & A. Leslie, engineers, and Mr. J. Falconer King, city analyst, Edinburgh, on the drainage of the burgh. The estimated cost of the purifying works is 4,000*l*., and from 2*l*. 10*s*. to 3*l*. would be required per day for working expenses.

Working Boys' Home, Hereford.—The memorial stone of a new building in Bath-street, Hereford, which is intended to be the Herefordshire and District Working Boys' Home, has been laid by Mrs. Atlay, wife of the bishop of the diocese. The premises occupy a site near the Model Farm. The principal entrance will be approached from Bath-street through a framed timber porch into the hall, on the left of which will be the visitors' room, and the waiting or committee room, and on the right will be the master and matron's sitting-room, the master's office and store-room being adjacent thereto. In the rear there will be a spacious school and dining-room, capable of being divided off into a class-room by a patent movable partition. The cost will be about 1,650*l.*, and it is expected that the work will be completed by the close of the present year. The contractor is Mr. Thomas Lewis, of Hereford, builder; and the honorary architects are Messrs. Haddon, Brothers, of Hereford.

To Write upon Glass.—M. Terquem has communicated to the *Société industrielle du Nord*, of France, a process which permits of very permanent writing being done on glass with ordinary or India ink. For this purpose, the surface of the glass is gently heated over an alcohol lamp, or Bunsen gas-flame, until the vapour of water ceases to condense upon it, when it is to be coated with a varnish made after the following recipe. The materials are, 80 grammes of alcohol (90°), 4 grammes of mastic, and 8 grammes of sandarac. This mixture will be dissolved by heating it over the water-bath in a flask well stoppered and tied. This varnish is very hard, and ought to be completely transparent; if the surface over which it is poured is cold, it becomes opaque. The glass surface coated in the manner described, may now receive any design or sketch drawn upon it with ordinary ink or India ink. It is then covered with a film of any non-alcoholic varnish.

Memorial Font, Wath-upon-Dearne.—A new font has recently been erected in the parish church of Wath-upon-Dearne, by Mr. W. S. Cadman, of Millfield, York, as a tribute of affection and respect to the memory of his father, Mr. Wm. Cadman. The new font is executed in Hollington stone, and is designed to harmonise with the choir fittings and reredos. It is hexagonal in form, and, with the base upon which it stands, is 5 ft. in height. Each face is panelled with traceried work and carved label mould, and has buttresses and crockets supporting each corner. The cover is 5 ft. high, and has a carved and traceried spire. The stonework is from the workshop of Mr. William Earp, of Lambeth and Manchester; and the oak cover was made by Mr. William Tomlinson, of Leeds. The whole of the work has been designed and carried out under the superintendence of Messrs. Hadfield & Sons, architects, Sheffield.

Church Decoration at Banbury.—The work of decorating the chancel of the parish church, Banbury, is now actively going on. The designer is Mr. Blomfield, the architect, who has been entrusted with the whole of the alterations which have been made in the chancel. The three wall panels will contain the twelve apostles in groups of four in each panel, the figures being more than life-size. The dome will be richly decorated, the subject being taken from the 4th chapter of Revelations. The pilasters between the panels, &c., are being richly ornamented in gold and colours. The work has been entrusted to Messrs. Heaton, Butler, & Bayne, by whom the other decorations of the church and the painted windows have been executed.

University Buildings for Edinburgh.—A deputation from Scotland has waited upon the Prime Minister to urge that grants should be made out of the Imperial Exchequer to extend and improve the buildings of the University of Edinburgh. They presented a memorial showing that this was very much wanted; that Scotland had already subscribed 81,000*l.* out of a total of 261,000*l.* required; that the University conferred benefits upon the whole country, and on that ground they asked for Imperial funds. Mr. Disraeli said the subject should occupy the thorough attention of Her Majesty's Government.

Health of Hastings.—The Medical Officer of Health reports that the death-rate in Hastings for the past quarter amounts to 16·4 per thousand, against 17·7 in the quarter ending March. This cannot be considered other than satisfactory.

The Artisans' Dwellings Act and Wolverhampton.—The Artisans' Dwellings and Streets Improvement Committee of the Wolverhampton Town Council submitted a report on Monday last, the 10th inst., stating that they find that the area of the town reported on by the Medical Officer of Health on the 13th of March is an unhealthy area, and that the Corporation have a sufficiency of resources for carrying out a scheme proposed under the Artisans' Dwellings Act by the committee for rendering the area healthy. Notice has been given of a resolution adopting the draft scheme, and empowering the committee and town clerk for obtaining its confirmation by the Local Government Board, a provisional order, and a confirmation of the order by Act of Parliament.

Building Operations in Warrington.—We learn from a local paper that, notwithstanding the dulness of trade in most parts of the country, and the corresponding distress caused by depression, the activity of trade in Warrington is as great as ever, and the building operations of the town are especially noticeable. At the last meeting of the Town Council a matter calling for special remark was the fact that during the past month plans for the erection of no less than 240 dwelling-houses had been passed by the Council, and this remarkable state of activity has existed for some time past. Then there are a number of large buildings on hand, some of which are nearly completed, and others are being just commenced.

River Pollution in the Potteries.—Some twelve months ago the Duke of Sutherland announced his intention to secure as far as possible the purity of the river at Trentham by compelling the towns above that spot to abstain from polluting the Trent and its tributaries. Longton came to terms with his Grace at an early stage, but the authorities of Tunstall and Newcastle have been brought by the Duke's solicitors into intimate if not agreeable relations with the High Court of Justice, and now the Burslem Board of Health is threatened with an injunction. The Sanitary Committee of the Board have been considering for some time past the best mode of dealing with the sewage.

Co-operative Stores at Spennymoor.—New co-operative stores have just been built at Spennymoor, from plans prepared by Mr. W. V. Thompson, architect, of Bishop Auckland. Contracts for the building were let in the spring of last year, the contractors being, for mason and brickwork, Mr. Thos. Winstone, Spennymoor; joiner work, Mr. Thompson, Bishop Auckland; painting, glazing, and plumbing, Mr. Almond, Durham; slating, Mr. Mascall, Bishop Auckland; heating, Messrs. Walker & Elmley, Newcastle. The premises consist of shops, warehouses, stables, and house for the manager.

A Chinese Magazine.—Messrs. Bourne & Co. have sent us a copy of the *Chinese Industrial Magazine*, published monthly in Shanghai, and which circulates widely throughout China. Its object is to impart to the Chinese information regarding the arts, sciences, and production of European nations, and, partly from the example of Japan and partly from other causes, the Chinese have now become sensible of the value of such information both to their individual profit and national welfare. The cuts which illustrate the magazine are obviously English, and have a trade bearing.

Civil and Mechanical Engineers' Society. The annual meeting of this society has been held. The names of gentlemen elected to the various offices during the ensuing session are as follow, viz.:—President, Mr. Robert M. Bancroft, C.E. Vice-presidents: Messrs. Henry Valpy and Charles Henry Driver. Council: Messrs. Percy Burrell, F. E. Cooper, Henry Ellis Hill, Christopher Kingsford, Alex. Payne, Edward Perrett, Robert E. Pownall, and Robt. Harkness Twigg. Hon. Treasurer: Mr. William C. Street. Auditors: Messrs. Joseph L. Anderson and James Hutt. Secretary: Mr. W. Williams Thomas.

Means of Exit from Factories on Fire.—The recent terrible calamity at Ayr, by which twenty-nine millworkers were burnt to death, is attracting much attention in the North, and Lord Dean of Guild King, of Glasgow, has directed that an inquiry shall be at once made regarding the means of exit provided in all the factories in and around Glasgow. At the last ordinary meeting of his Court, Mr. King expressed the hope that the millowners would generously assist him, and regard the inquiry as "neither inquisitorial nor purposeless."

New (R. C.) Seminary, Westminster.—Cardinal Manning laid the first stone of the new seminary for the diocese of Westminster, on the 7th. The building is to be a quadrangular arrangement, of large dimensions. Red brick is to be used for the facing, with Chilmark stone dressings, and tiles for the roofs. The amount of the first contract is 17,000*l.* Mr. Bentley is the architect.

The Liverpool Water Supply.—At the special meeting of the Liverpool Town Council on the 26th ult., it was resolved that in view of the imperative necessity of an ample supply of water for sanitary and trade purposes, the water committee should in future base their calculations on a supply of thirty gallons per head per day upon the estimated population. The calculations have hitherto been on the basis of twenty-five gallons.

The Persons Employed by Messrs. J. W. Bird & Co., the Emporium Marble Works, Euston-road, supped together on Wednesday evening, the 5th inst., on the occasion of the fiftieth anniversary of the birthday of the principal, Capt. J. W. Bird, 1st S.A.V.B., when the opportunity was taken of presenting him with a testimonial, subscribed for by the permanent staff, with a congratulatory address.

The Horsham Waterworks.—The Horsham Local Board have resolved to accept the offer of the water company to sell the whole of their works, materials, &c., for 7,000*l.*, subject to the approval of the Local Government Board.

Abingdon.—Mr. Charles Claridge, builder and contractor, of Banbury, is engaged in erecting extensive malting premises in this town, for Mr. Walter J. Powell, from designs by Mr. W. Jenkins, architect, Birmingham.

TENDERS

For stabling and garden-walls, at Wandsworth, for Mr. Robert Jones. Messrs. A. & C. Harston, architects:—

Bangs	£1,645	0	0
Ennor	1,632	0	0
Baker & Son	1,591	0	0
Tilley	1,487	0	0
Adamson (accepted)	1,345	0	0
Hill, Higgs, & Hill	1,340	0	0

For shop and three houses, in Wilford-road, Nottingham. Mr. T. G. Alderson, architect:—

Johnson	£998	0	0
Middleton	880	0	0
Mason	812	0	0
Parnall	800	0	0
Sharpe	726	0	0

For Congregational School Chapel, Woodley, near Stockport. Mr. W. Ranger, architect:—

Warren	£520	0	0
Hague (accepted)	484	0	0

For forming a new road and sewer, at Balham, for Mr. S. W. Causton. Messrs. E. Habershon & Brock, architects:—

Loat	£698	0	0
Bloomfield	616	0	0
Mattock, Brothers	568	0	0
Neal	386	0	0

For a pair of semi-detached residences, at Sudbury, Middlesex. Messrs. E. Habershon & Brock, architects:—
Mattock, Brothers (accepted).

For painting, &c., at the Poplar and Stepney Sick Asylum, Bromley, Middlesex. Messrs. A. & C. Harston, architects:—

Cocks	£554	0	0
Derby	439	0	0
Selby	369	17	6
Vigor (accepted)	270	0	0

For business premises and residence, at Haverfordwest, Pembrokeshire. Mr. Gaskell, architect. Quantities supplied by the architect:—

Lawton	£10,000	0	0
Stephens & Bastow	9,110	0	0
Jones & Co.	8,732	0	0
Thomas, Watkins, & Jenkins	8,703	0	0

For rebuilding a warehouse, Goldsmith-street. Messrs. Ford & Hesketh, architects:—

Merritt & Ashby	£2,244	0	0
Downs & Co.	2,190	0	0
Mark	2,166	0	0
Killby	2,135	0	0
Hobson	2,134	0	0
Newman & Mann	2,123	0	0
Browne & Robinson	2,097	0	0
Brass	2,097	0	0
Crabb	2,060	0	0
Lawrence	1,999	0	0
Boyce (accepted)	1,912	0	0

For an additional story to a warehouse, in Wood-street. Messrs. Ford & Hesketh, architects:—

Downs & Co.	£726	0	0
Newman & Mann	711	0	0
Brass	711	0	0
Merritt & Ashby	687	0	0
Browne & Robinson	683	0	0
Mark	678	0	0
Lawrance	666	0	0
Hobson	658	0	0
Killby	645	0	0
Boyce	622	0	0
Crabb	613	0	0

For public offices, Tipton, Staffordshire, for the Tipton Local Board of Health. Messrs. Charles Round and Henry Beddoe, joint architects. Quantities supplied:—

Millard	£3,220 0 0
Nelson	2,980 0 0
Round & Bagnall	2,939 0 0
Mallin	2,878 5 0
Stockton & Son (accepted)	2,657 0 0

For a cottage and offices, at Tipton-green Furnaces, for Mr. W. Roberts. Messrs. Round & Beddoe, architects. Quantities supplied:—

Nelson	£1,041 0 0
Holland & Sons	1,021 0 0
Adams	894 0 0
Tranter	865 0 0
Stockton & Son	863 0 0
Grosvenor & Sons (accepted)	743 0 0

For a residence and outbuildings, Dudley-road, Tipton, Staffordshire, for Mr. W. Lowe. Messrs. Round & Beddoe, architects. Quantities supplied:—

Burkitt	£3,167 0 0
Adams	2,359 0 0
Millward	2,305 10 0
Stockton & Son	2,288 0 0
Bagnall & Round	2,104 0 0

For alterations and building shop additions to Nos. 152 and 154, Salmon-lane, Limehouse, for Mr. Bebrouth. Messrs. A. & C. Harston, architects:—

Abrahams	£392 0 0
Bulford	364 0 0
Johnson	336 0 0
Harris & Wardrop (accepted)	318 0 0

For addition to No. 181, Salmon-lane, Limehouse, for Mr. Steil. Messrs. A. & C. Harston, architects:—

Johnson	£169 0 0

For model building, to be erected at Hampstead, for the Wells Charity Trustees. Mr. Henry S. Legg, architect:—

Nightingale	£5,595 0 0
Brass	5,301 0 0
Sewell	5,262 0 0
Manley & Rogers	5,230 0 0
Browne & Robinson	5,193 0 0
Burford	5,132 0 0
Allen & Son (accepted)	4,650 0 0

For Board schools and teacher's residence, at Michelmersh, Hampshire. Mr. W. H. Mitchell, architect:—

Stevens	£970 0 0
Chapman	968 0 0
Rowland	938 0 0
Crook (accepted)	929 0 0

For alterations, &c., to Clare Lodge, Clapham Park, for Mr. C. Allcock. Mr. W. Newton Dunn, architect:—

Clemence	£750 0 0
M'Lachlan & Son	695 0 0
Smith (accepted)	581 0 0

For new factory, Nag's Head-court, Golden-lane. Mr. Finch Hill, architect. Quantities supplied:—

Thoms	£1,463 0 0
Pocock	1,455 0 0
Eaton	1,394 0 0
Moreland & Nixon	1,381 0 0
Lawrence	1,359 0 0
Sabey	1,350 0 0
Ebbage	1,247 0 0
Hobson	1,222 0 0
Bays (Brothers) & Hannen	1,150 0 0
Grover	1,146 0 0

For Wesleyan Chapel, at Brockley. Mr. Banister Fletcher, architect:—

	Brick.	Kentish Rag.
Taylor	£7,359	£7,700
Slade	6,816	—
Bishop (accepted)	5,580	5,580

For repairs at Hobson's-place, Spitalfields. Mr. B. Fletcher, architect:—

Hodges	£320 0 0
Bushell	188 10 0
Single	179 0 0

For the erection of a villa, Peckham-rye. Mr. B. Fletcher, architect:—

Weeks & Son	£590 0 0
Brevitor (accepted)	450 0 0

For Alterations at Monmouth-court, Dudley-street. Mr. Fletcher, architect:—

Hobern	£375 0 0
Robson (accepted)	300 0 0

For Aston and Handsworth combined sewers. Contract No. 1. Mr. W. Humber, engineer. Quantities supplied:—

Nowell, Brothers	£39,977 5 0
Palmer & Lee	39,531 15 0
Young & Co.	34,961 4 0

For a house, to be erected on the Chelsea Embankment, for Mr. J. J. Lowndes. Mr. A. W. Blomfield, architect. Quantities supplied by Mr. S. Tucker:—

Messrs. Dove	£4,325 0 0
Lascelles	4,177 0 0
Messrs. Adamson	4,023 0 0
Gregory	4,019 0 0
Gillow & Co.	3,720 0 0

For alterations and additions to "Longcroft," near Hayes, Kent. Messrs. Tress & Innes, architects:—

Stimpson & Co.	£6,242 0 0
Ashby, Brothers	5,591 0 0
Sewell & Son	5,467 0 0
Payne & Balding	5,243 0 0
Fish	4,913 0 0

For new offices and County Court Office, Reading, for Messrs. H. & C. Collins. Messrs. W. & J. T. Brown and F. W. Albury, architects:—

Elliott (accepted)	£1,774 0 0

For rebuilding the Saracen's Head, at Reading, for Messrs. H. & G. Simonds. Messrs. W. & J. T. Brown and F. W. Albury, architects:—

Dodd (accepted)	£1,023 0 0

For the erection of new Congregational Church, in Friar-street, Reading. Messrs. W. & J. T. Brown and F. W. Albury, architects:—

Elliott (accepted)	£2,850 0 0

For additions and alterations to The Gibraltar Tavern, Tidal Basin, Victoria Docks. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

Manning & Dowdney	£930 0 0
Taylor	807 0 0

For alterations and additions at St. Cuthbert's, Bournemouth. Mr. T. S. Archer, architect:—

Dashwood	£425 0 0

For alterations and additions at Montague House, Bournemouth. Mr. T. S. Archer, architect:—

Hoare, Brothers, & Walden	£139 10 0
Carpenter	116 10 0
Dashwood	115 0 0

For the erection of a range of vineries at Kelsey Manor, Beckenham. Mr. T. S. Archer, architect:—

Messenger (accepted)	£518 0 0

For alterations and additions to school buildings, Sutton Valence, Kent, for the Clothworkers' Company. Mr. F. W. Porter, architect:—

	Additions.	Laboratory.
Holland & Hannen	£4,700	£240
Avard	4,689	223
Conder	4,650	250
Vaughan	4,600	219
Dove, Brothers	4,564	220
Naylor (accepted)	4,397	200

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We are compelled to decline pointing out books and giving addresses.

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